CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF CITY PLANNING

DRAFT

84.199E

524 HOWARD STREET

OFFICE BUILDING

ENVIRONMENTAL IMPACT REPORT

PUBLICATION DATE: JANUARY 17, 1986

PUBLIC HEARING DATE: FEBRUARY 20, 1986

PUBLIC COMMENT PERIOD: JANUARY 17, 1986 TO FEBRUARY 20, 1986

WRITTEN COMMENTS SHOULD BE SENT TO
THE ENVIRONMENTAL REVIEW OFFICER
450 McALLISTER STREET, SAN FRANCISCO, CA 94102

DATE: January 17, 1986

TO: Distribution List for the 524 Howard Street Project Draft EIR

FROM: Barbara W. Sahm, Environmental Review Officer

RE: Request for the Final Environmental Impact Report for the 524 Howard Street Project

This is the draft of the Environmental Impact Report for the 524 Howard Street Project. A public hearing will be held on the adequacy and accuracy of this document. After the public hearing, our office will prepare and publish a document titled "Summary of Comments and Responses" which will contain a summary of all relevant comments on this draft EIR and our responses to those comments. It may also specify changes to this draft EIR. Those who testify at the hearing on the draft will automatically receive a copy of the Comments and Responses document along with notice of the date reserved for certification (in this case, probably about 8 to 10 weeks after the hearing on the draft); others may receive such copies and notice on request or by visiting our office. This draft EIR together with the Summary of Comments and Responses document will be considered by the City Planning Commission in an advertised public meeting and certified as a final EIR.

After certification, we will modify the draft EIR as specified by the Comments and Responses document and print both documents in a single publication called the Final Environmental Impact Report. The final EIR will add no new information to the combination of the two documents except to reproduce the certification resolution. It will simply provide the information in one rather than two documents. Therefore, if you receive a copy of the Comments and Responses document in addition to this copy of the draft EIR, you will technically have a copy of the final EIR.

We are aware that many people who receive the draft EIR and Summary of Comments and Responses have no interest in receiving virtually the same information after the EIR has been certified. To avoid expending money and paper needlessly, we would like to send copies of the final EIR to private individuals only if they request them.

If you want a copy of the final EIR, please so indicate in the space provided on the next page and mail the request to the Office of Environmental Review within two weeks after certification of the EIR. Any private party not requesting a final EIR by that time will not be mailed a copy. Public agencies on the distribution list will automatically receive a copy of the final EIR.

Thank you for your interest in this project.

PLACE
POSTAGE
HERE

Department of City Planning
Office of Environmental Review
450 McAllister Street, 5th Floor
San Francisco, CA 94102
Attn: Ms. Sally E. Maxwell
84.199E 524 Howard Street

CUT ALONG DOTTED LINE

RETURN REQUEST REQUIRED FOR FINAL ENVIRONMENTAL IMPACT REPORT

REQUEST FOR FINAL ENVIRONMENTAL IMPACT REPORT

To: Department of City Planning,
Office of Environmental Review

Please send me a copy of the Final EIR.

Signed: _____

Print Your Name and Address Below

CITY AND COUNTY OF SAN FRANCISCO
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524 Howard Street office
building : [draft]
1986.

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I. SUMMARY

PROJECT DESCRIPTION

The project sponsor, 524 Howard Associates, proposes to construct a 25-story office and retail building at 524 Howard St. in San Francisco. The architects are Heller & Leake, Architects. The sponsor's objectives are to develop high-quality office space with relatively small-size office floors; to produce a distinctive landmark building identifying an important City location; and to provide a return on investment.

The project site is on the north side of Howard St. between First and Second Sts., Lot 13 of Assessor's Block 3721. Natoma St. borders the site to the rear (north). Northeast of the Natoma and First St. intersection is the Transbay Terminal. The 12,267-sq.-ft. site is developed with a one-story garage on the southern portion of the site and a paved lot on the northern portion of the site. The garage, which has been rated by the Department of City Planning ("2") and the Foundation for San Francisco's Architectural Heritage ("B"), would be demolished for the project. The site is in the C-3-O (SD) (Downtown Office Special Development) Use District, in which the basic allowable Floor Area Ratio (FAR) is 6:1. It is in the 450-S Height and Bulk District, in which the maximum height is 450 feet. The "S" zone divides buildings into three sections: the base, lower tower and upper tower. The "S" designation is intended to result in slender stepped buildings with interesting rooflines.

The project would be a 25-story (including the roof-top mechanical level), approximately 333-ft. tall building (including the mechanical roof level) with 258,292 gross sq. ft., including parking, mechanical and other unoccupied floor area. The building would incorporate 147,213 sq. ft. of transferred development rights from as-yet unidentified sites. The ground floor level would contain retail space (3,570 sq. ft.) facing a two-story pedestrian arcade. The mezzanine level would contain 5,630 sq. ft. of retail space and 3,540 sq. ft. of office space. Floors 3 through 24 would contain 220,815 sq.

ft. The 25th floor (roof-level) would contain mechanical space, and the basement would contain 45 parking spaces. The two ground-floor freight loading spaces and the ramp to the basement parking level would be accessible from Natoma St.

The Howard St. entrance would be defined by a four-story-high recess. A double-height pedestrian arcade would extend through the ground floor to Natoma St. Setbacks would be located at the 16th floor on the Howard and Natoma Sts. faces; corners would be cut back at the 6th, 13th, 15th, 23rd and 24th levels.

The building would be clad in granite at the first floor and in precast concrete on the upper floors. Windows would have either solar green or grey-tinted, nonreflective glass. The center window bay on the Howard St. elevation would be wider than other window bays to provide a strong central element. The vertical aspects of the building would be accentuated by projecting column covers carried beyond parapets. The core element would have vertical projections and elevator lobby windows to create visual interest.

PROJECT EFFECTS

LAND USE AND ZONING

The project would require demolition of a one-story parking garage. The project would replace a parking garage and lot with a mixed-use (office and retail) structure.

URBAN DESIGN

By replacing a one-story building with a high-rise tower the proposed project would change the scale, facade, building texture and ornament of the 500-block on Howard St. The visual coherence of Natoma St., broken by numerous parking lots, would not be similarly affected.

SHADOW AND WIND

The project would cast new shadows on some streets in the area and across rooftops and the Transbay Terminal ramp north of the site. It would shade portions of the open space planned as part of the 100 First St. and 535 Mission St. projects on the roof of the garage west of the 100 First St. project site. The project would shade the planned open space during mid- and late mornings in spring and fall (from about 10 a.m. to 11:00 a.m. in March shading from about 1,800 sq. ft. to about 200 sq. ft., and at about 11 a.m. to noon in September, shading the same areas). In winter, the project would shade this area in the morning (9:30 to 10:30 a.m.). At noon and 1 p.m. in winter, the project would shade about one-third or less of the bus unloading area in front of the Transbay Terminal. Because of the project's slender profile, at no time would it shade the whole of any of these spaces. The Downtown Plan recommends private development of open space on Block 3737 (bounded by Howard, First and Fremont Sts. and Tenny Place). The project would shade this area beginning at 4 p.m. in the spring and fall, and about three-quarters of an hour before sunset in the winter.

Section 148 of the Planning Code specifies that development must "not cause ground level wind currents to exceed, more than 10% of the time year round, between 7:00 a.m. and 6:00 p.m., the comfort level of 11 mph equivalent wind speed in areas of substantial pedestrian use and 7 mph equivalent wind speed in public seating areas." Section 148 further requires that new development reduce ambient wind speeds exceeding the comfort criteria to meet the requirements. The proposed project would result in exceedance of the 11 mph pedestrian comfort criterion at one location, on the south side of Howard Street, across from the project site. The project would not result in exceedances of the 7 mph comfort criterion for public seating areas. The project would require an exception as provided in Section 148(a) of the City Planning Code subject to approval under Section 309 of the City Planning Code.

HISTORIC, ARCHITECTURAL AND CULTURAL RESOURCES

The project would not result in any effect on buildings categorized as significant or contributory in the Downtown Plan. It would result in the

demolition of the "B" rated garage on the site and could thereby affect the "C" rated buildings in the project area (the "C" rating indicates a contextual value). To the extent the project would incorporate undeveloped floor area from buildings protected under the Downtown Plan, preservation of such buildings would be encouraged.

Archival research has determined that any artifacts found during excavation would likely be of little important historic value.

TRANSPORTATION

Sidewalk detours and curb lane closures on both the Howard St. and Natoma St. frontages would be necessary during project construction. Demolition and excavation would generate an average of 10 and 40 truck round trips per day, respectively. Construction truck traffic would be limited to the period between 9:00 a.m. and 4:00 p.m.

The project would generate about 5,380 net new person trips per day. About 750 new outbound trips would occur during the p.m. peak period, 470 of these during the p.m. peak hour.

The project would remove an existing 100-space parking garage and provide 45 spaces in the new building. Estimated equivalent daily parking demand from the project would be about 195 spaces, resulting in an unmet demand of 150 spaces.

The proposed project would generate about 230 new pedestrian trips on the adjacent sidewalks during the noon 15-minute peak period and about 160 new pedestrian trips during the p.m. 15-minute peak period. Sidewalk operations, currently in the open, unimpeded and impeded ranges at locations adjacent to the project site during both the noon hour and p.m. peak hour, would increase slightly with the addition of anticipated pedestrian trips from the project, but levels of service would not change.

The project would add about 180 outbound trips to Muni, 135 trips to BART, and 95 outbound trips to other transit agencies during the p.m. peak period in the year 2000. The project would generate an annual cost deficit to Muni of

about $45,400, which would be less than its contributions to the General Fund, the Transit Development Impact Fee, and sales tax revenues. The project would result in an annual net operating deficit to BART of about $184,600. BART's operating deficit per passenger is likely to decline in real terms as planned service improvements become operational in the future.

The transit demand from the project would represent about 0.2% of the total transit demand in the year 2000. Cumulative development under the Downtown Plan to the year 2000, in conjunction with planned capacity increases of transit carriers, would be expected to cause the following changes in transit levels of service during the peak period: Muni Northeast Corridor, D to C; BART Transbay, F to E; AC Transit, C to D; Golden Gate Ferry, B to A; Tiburon Ferry, B to C; and CalTrain, B to C.

With cumulative development by the year 2000, sidewalk and crosswalk operations would remain in the unimpeded and impeded range for all locations studied.

Cumulative development, including that from the proposed project, by the year 2000 would be expected to further exacerbate the existing peak-hour traffic Level of Service (LOS) "F" conditions at the intersection of First and Harrison Streets and worsen existing LOS "C" conditions at the intersection of Fourth and Harrison Streets to LOS "D".

About 0.1% of year 2000 Bay Bridge peak-period demand would be due to the project. The project also would represent about 0.1% of peak-period demand on the Golden Gate Bridge, 0.1% on US 101 (south of Harney Way), and 0.1% on I-280 (between Alemany Boulevard and San Jose Avenue).

The C-3 District would generate demand for approximately 58,000 equivalent daily parking spaces in the year 2000 under the Downtown Plan, an increase of 28% from 1984. Short-term demand would continue to represent about 25% of the total demand. The project parking demand would represent less than one percent of the total demand from the C-3 District. The parking supply has been assumed to be about 51,000 spaces. There would be a parking deficit of about 6,000 spaces in the year 2000 if vehicular demand occurs as projected. Alternatively, if the goals of the Downtown Plan are achieved, total parking

demand in the year 2000 would increase by about six percent over 1984 and there would not be a parking deficit.

The City Planning Code would require two loading spaces for the project; the project would provide two loading docks.

AIR QUALITY

Traffic generated by cumulative development would increase the total regional burden of emissions in the Bay Area. This increase would not produce increases in ozone concentrations in the Bay Area, although it could produce small increases in ozone at locations further downwind. The project would produce about two percent of the total air pollution generated by development as projected in the Downtown Plan EIR in 2000.

Cumulative-development-generated traffic could also increase carbon monoxide (CO) emissions on local streets. However, because of ongoing state and federal emissions control regulations, these increases would not cause CO concentrations in future years to be higher than they are currently. Rather, CO concentrations would generally continue to decrease as older, more polluting vehicles are replaced by newer cars. CO concentrations at one (Sixth and Brannan Sts.) of the eleven intersections examined in the Downtown Plan EIR would continue to violate state and federal standards in 1990 and 2000.

ENERGY

Annual electrical energy consumption at the project would be 2.2 million kilowatt hours (kWh); annual natural gas consumption would be 1.7 billion Btu. Annual transportation energy consumption would be 790,000 kWh and 119,000 gallons of gasoline and diesel fuel. Total at-source Btu consumption would be 25 billion Btu annually.

CONSTRUCTION NOISE

Construction activities would temporarily increase noise and vibration levels in the area of the site. During excavation and exterior finishing, noise levels in buildings adjacent to the site could reach as high as 75 dBA, and

during pile driving, noise levels could reach as high as 90 dBA. Vibrations from the impact during pile driving would be felt at adjacent and nearby buildings.

EMPLOYMENT AND HOUSING

The project would accommodate about 870 permanent full-time jobs, mainly consisting of positions in corporate and professional positions. Housing demand generated by the project would be approximately 85 units in San Francisco, according to the formula in Section 313 (OAHPP, Ordinance 358-85).

Employment growth and building development in the C-3 District will result in more C-3 District workers living in the City. In the year 2000, 189,000 C-3 District workers are forecast to be living in San Francisco, an increase of 30,000 (19%) from 1984. The persons employed in the project would be part of this total. About 400 people working in this building would live in San Francisco, about 0.2% of the total for the C-3 District.

Employment growth accommodated by the project, as part of cumulative C-3 District employment growth, has implications for the San Francisco housing market. These can be summarized as follows:

- There would be more people with preferences and increased resources to pay for San Francisco housing, adding to an already strong demand.

- The housing supply would be expanded in San Francisco. However, the private market is expected to continue to have difficulty producing affordable housing, for many housing market reasons.

- There would be increased competition for the available housing units. As a result, there would be higher prices/rents for San Francisco housing with continued employment growth than without it.

- Generally, households with fewer financial resources to pay for housing would make the most sacrifices in these market conditions. San Francisco currently is and will continue to be home to a large number of persons who would be faced with greater difficulty in securing adequate housing.

Cumulative employment growth in downtown San Francisco would have less impact in the context of the rest of the region's housing market. Considering trends in labor force participation, workers per household, housing production and employment growth throughout the region, future workers in downtown San Francisco would not require much larger shares of the region's housing stock in the future than they do now. In the future the relationship between downtown workers and other workers competing for housing in the region would be relatively similar to current conditions. As part of total regional employment growth to the year 2000, increases in San Francisco employment can be viewed as contributing to regional housing demand and to a regional housing market with relatively high housing prices and rents.

MAJOR MITIGATION MEASURES

Transportation - Measure proposed as part of the project: The sponsor would contribute to Muni under Ordinance 224-81, if upheld, or any other lawful measures passed by the Board of Supervisors; a transportation broker would coordinate ride-sharing, flex-time, and encouraging transit use through on-site sale of transit passes. (Intercept and other parking mitigation measures have yet to be approved by sponsor.)

Wind - Measure proposed as part of the project: Street trees would be planted along the project's Howard St. frontage to reduce wind speeds on Howard St.

Wind - Measure under consideration: Additional features which would reduce wind speeds on Howard St. (at the south side of the street opposite the project site) include, but are not limited to, kiosks for newspaper salespersons, flower vendors, telephone booths and/or low ground-level planter boxes. Since this location is not on the project side of the street, implementation of this measure would require cooperation from and coordination by the Department of Public Works.

Construction Noise - Measure proposed as part of the project: Construction equipment would be muffled and shrouded; barriers would be constructed around the construction site. Pile holes would be predrilled.

ALTERNATIVES TO THE PROPOSED PROJECT

The following alternatives to the proposed project are discussed in Section VII of this report:

A. No Project

B. 6:1 FAR - No Transfer of Development Rights

C. No Exceptions to Setback Requirements

D. Parking Alternative
   1. Replacement of Existing Site Parking Variant
   2. No-Parking Variant

II. PROJECT DESCRIPTION

A. PROJECT SPONSOR'S OBJECTIVES

The project sponsor, 524 Howard Associates, proposes to construct a 25-story office building at 524 Howard St. in San Francisco. The architects are Heller & Leake, Architects. The sponsor's objectives are to develop high-quality office space to serve an expanding downtown; to provide relatively small-size office floors for users of this type of space; to produce a unique and distinctive building that will serve as a landmark identifying an important City location; and to provide a return on investment.

B. PROJECT LOCATION

The project site is on the north side of Howard St. between First and Second Sts., Lot 13 of Assessor's Block 3721 (see Figures 1 and 2, pp. 11-12). Natoma St. borders the site to the rear (north). Northeast of the Natoma and First St. intersection is the Transbay Terminal. The 12,267-sq.-ft. site is developed with a one-story garage with 100 parking spaces on the southern portion of the site and a paved lot on the northern portion of the site. The garage, which would be demolished for the project, is rated "2" by the 1976 Department of City Planning Architectural Inventory. It is rated "B" by Heritage (see Section IV.D). The site is in the C-3-O SD (Downtown Office Special Development) Use District, in which the basic allowable Floor Area Ratio (FAR) is 6:1. It is in the 450-S Height and Bulk District in which the maximum height is 450 feet.

C. PROJECT CHARACTERISTICS

Project characteristics are summarized in Table 1. The project would be a 25-story (including the double height roof-top mechanical level), approximately 333-ft. tall building (including the mechanical roof level) with 258,292 gross sq. ft., including parking, mechanical and other unoccupied floor area. The basic allowable FAR in the C-3-O (SD) District is 6:1,

LEGEND

SITE

SOURCE: ESA

FIGURE 1
524 HOWARD
REGIONAL LOCATION

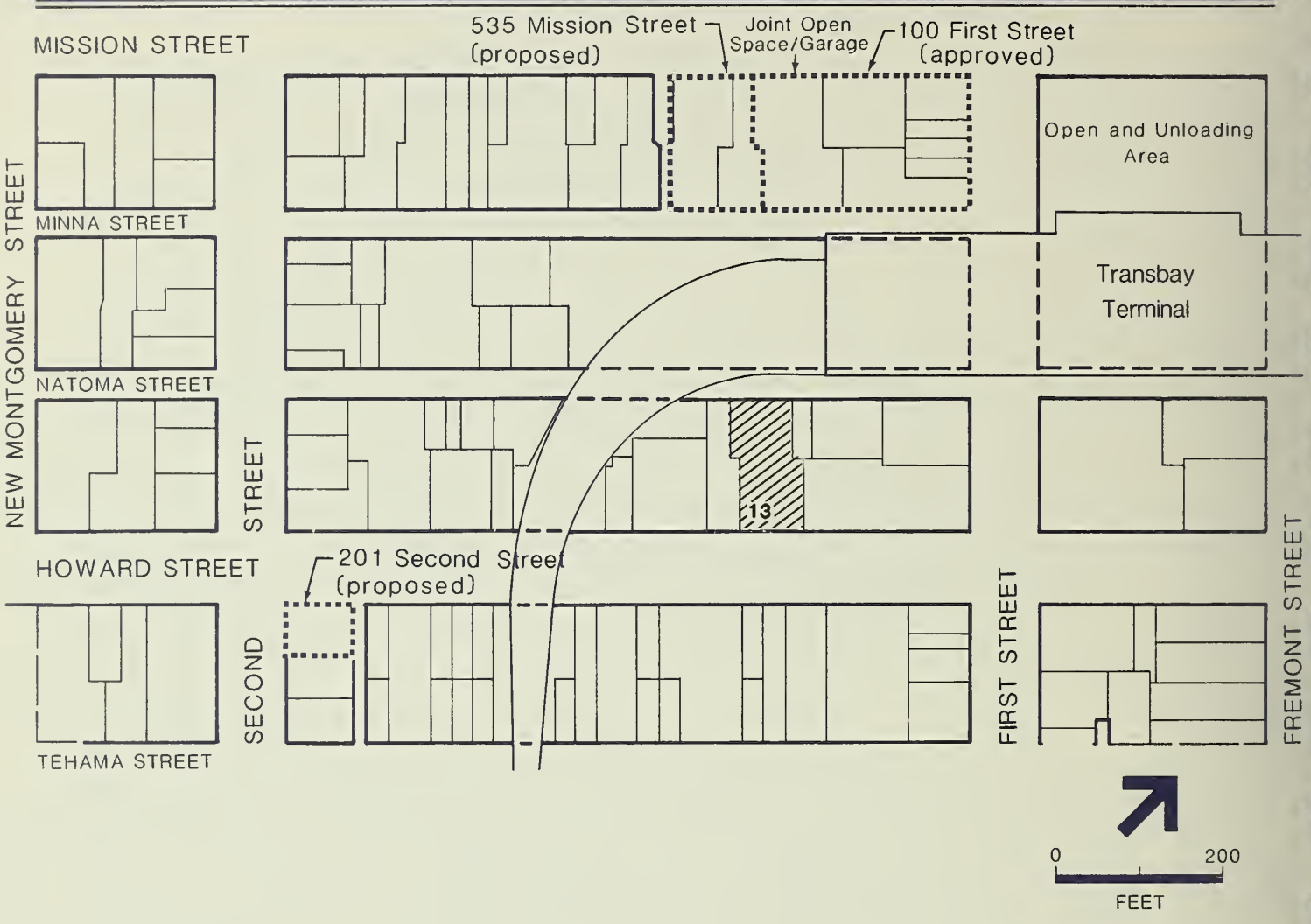


FIGURE 2
524 HOWARD
PROJECT SITE AND VICINITY

SOURCE: ESA

without TDR's. The FAR of the project, including both the site lot and transferor lots, would be less than or equal to 6:1 from this site and up to 9:1 from sites in the C-3-O District. The FAR calculated over the building footprint, which in this instance is equal to the project lot area of 12,267 sq. ft., would be 18:1 (73,602 sq. ft. as of right and 147,213 sq. ft. of TDRs). The Plan limits the use of TDRs to a maximum of 18:1 calculated over the development lot. The calculation excludes mezzanine-level retail from the FAR; exclusion of mezzanine-level retail is subject to approval under Section 309 of the Planning Code.

The ground floor would contain retail space (3,570 sq. ft.) facing a pedestrian arcade. The mezzanine would contain 5,630 sq. ft. of retail space and 3,540 sq. ft. of office space. Floors 3 through 24 would contain 217,275 sq. ft. The 25th floor (roof-level) would contain mechanical space, and the basement would contain 45 parking spaces, compared to 100 spaces now on the site. The two ground-floor loading spaces and the ramp to the basement parking level would be accessible from Natoma St. (See Figure 3, p. 15, for typical floor plans.)

The Howard St. entrance would have a four-story recess. A two-story high pedestrian arcade would extend through the ground floor to Natoma St. Corners would be cut away at various places around the building: at 162 ft., 186 ft., 200 ft., and 313 ft. on the east and west faces; and stair-step setbacks flanked by flying buttresses would define the roof (see Figure 4, p. 16). The building would be set back above the base on the west face, and on the east face except for the elevator core. It would be set back from Howard and Natoma Sts. at the 16th floor. The project would require an exception to the "tower separation setback" for the base element. Exceptions criteria to this setback requirement that would be met by the project are contained in Section 132.1(c)2)C) of the Planning Code, subject to approval under Section 309.

The building would be clad in precast concrete above the base, and in granite at the base. Windows would have solar green or grey-tinted, nonreflective glass. Vertical aspects of the building would be emphasized by projecting elements at column locations which would be carried past parapet lines. The central window bay on the Howard St. elevation would be wider than other window bays to emphasize the central element. The project would feature

TABLE 1: PROJECT CHARACTERISTICS

FLOOR AREA DISTRIBUTION

	Gross Building Area (gross sq. ft.)	Area Applicable to the FAR* (gross sq. ft.)
Basement (45 parking spaces)	12,600	-
Ground Floor (retail, 3,570 sq. ft.)	12,267	
Mezzanine (retail, 5,630 sq. ft.)	9,660	3,540
3-5 (3 floors @ 12,193 ea)	36,579	36,579
6-12 (7 floors @ 10,569 ea)	73,983	73,983
13-14 (2 floors @ 10,209 ea)	20,418	20,418
15 (1 floor @ 9,489)	9,489	9,489
16-21 (6 floors @ 8,654 ea)	51,924	51,924
22-24 (3 floors @ 8,294 ea)	24,882	24,882
Mechanical 25th (roof)	6,490	-
TOTAL	258,292	220,815

Usable Area Subtotals: (gross sq. ft.)	Retail	9,200
	Office	220,815
Total		230,015

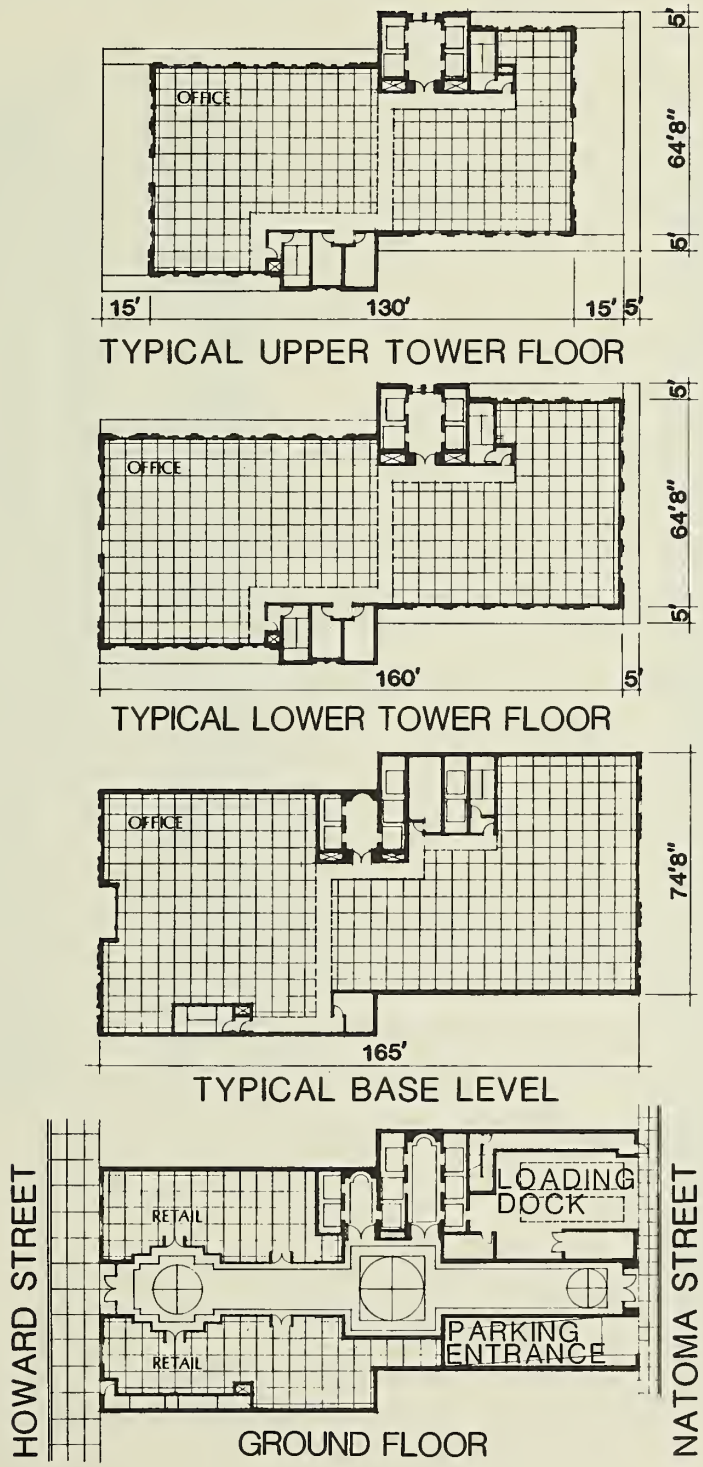
HEIGHT AND BULK MEASUREMENTS

	Existing Zoning	Proposed Project
Height	450 ft.	333 ft.
Length (Lower Tower Zone)	160 ft.	160 ft.
Diagonal (Lower Tower Zone)	190 ft.	175 ft.
Length (Upper Tower Zone)	130 ft.	130 ft.
Diagonal (Maximum Average - Upper Tower Zone)	160 ft.	140 ft.

* FAR: Floor Area Ratio. Certain areas, such as accessory parking, ground floor circulation and retail, and mechanical floors, are excluded from the calculation (Code Section 102.8).

SOURCE: Environmental Science Associates, Inc. and Heller & Leake

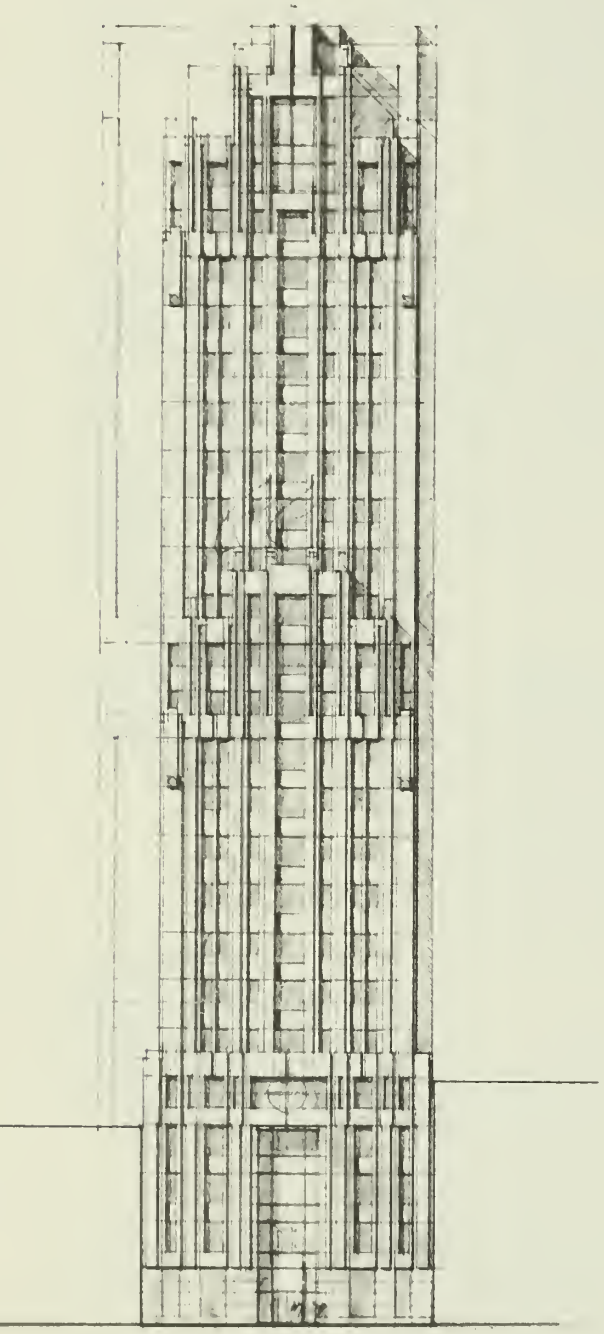
decorative vertical projections at the 12th and 22nd floors and horizontal bands at the 5th, 6th, 13th, 15th, 16th, 23rd, 24th and roof levels to provide a terracing effect. The building would cover the entire 12,267-sq.-ft. site.



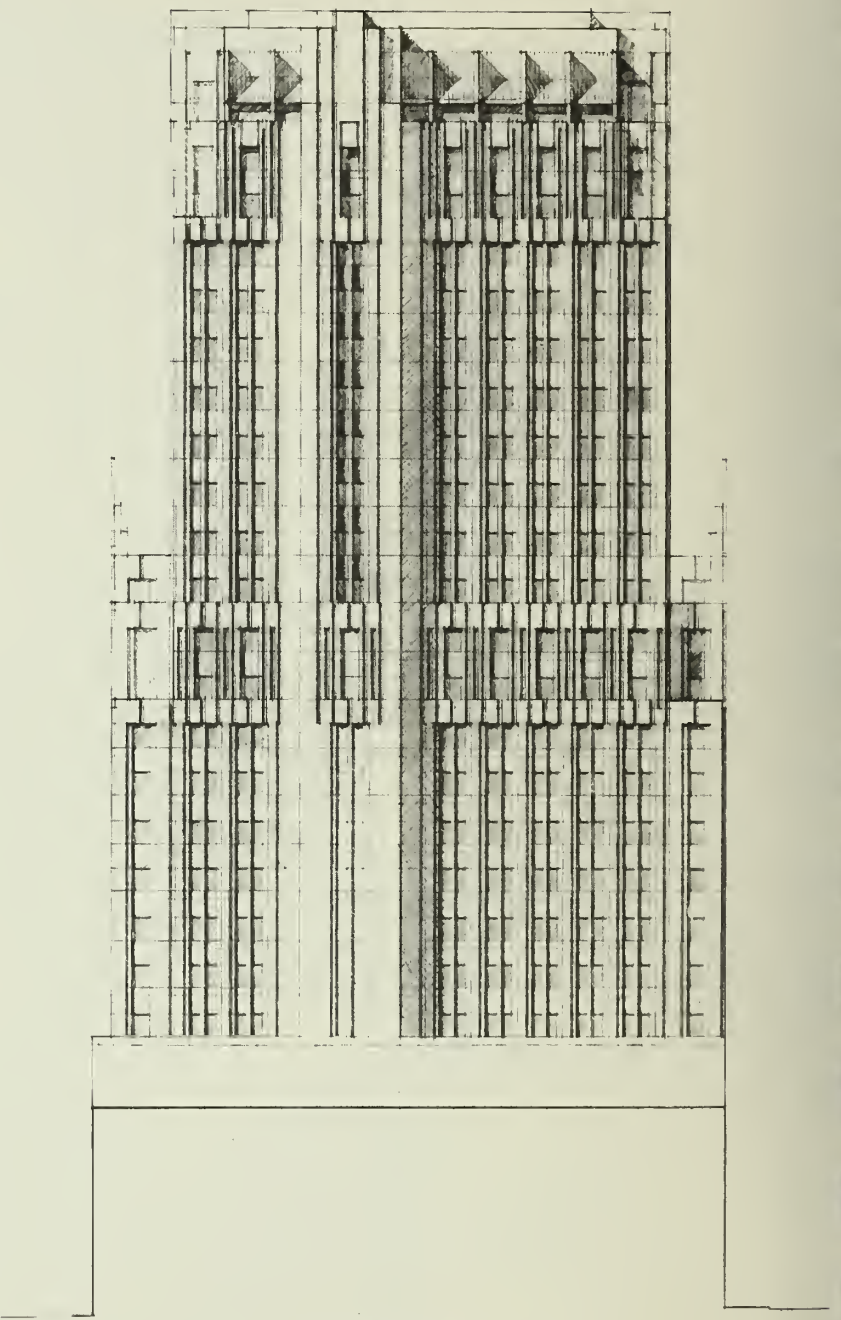
0 FEET 100

SOURCE: HELLER & LEAKE, ARCHITECTS

FIGURE 3
524 HOWARD
GROUND LEVEL AND
TYPICAL BASE, LOWER TOWER AND
UPPER TOWER FLOOR PLANS



HOWARD STREET ELEVATION



EAST ELEVATION

0 FEET 100

SOURCE: HELLER & LEAKE, ARCHITECTS

FIGURE 4
524 HOWARD
HOWARD STREET AND EAST ELEVATIONS

D. PROJECT SCHEDULE, COST AND APPROVAL REQUIREMENTS

PROJECT SCHEDULE

The project sponsor expects project review and design to be completed during the first half of 1986. Construction would take about 19 months. Project occupancy is expected to begin in late 1987.

COST

The estimated construction cost of the project is about $22.5 million (1985 dollars), including demolition, excavation, building shell and interior improvements. Replacement cost for the entire building, including land, architectural and engineering fees, and tenant improvements, would be about $38.5 million. Office space is expected to rent for $27 to $35 per sq. ft. per year. Retail space is expected to rent for $30 to $40 per sq. ft. per year.

APPROVAL REQUIREMENTS

Following a public hearing before the City Planning Commission on the Draft EIR, responses to all written and oral comments received during the Draft EIR public review period will be prepared, and the EIR will be revised as appropriate and presented to the City Planning Commission for certification as to accuracy, objectivity and completeness. No permits may be issued before the Final EIR is certified.

The Downtown Plan (the Plan) was adopted and proposed amendments to the City Planning Code to implement the Plan (Permanent Controls) were approved by the City Planning Commission on November 29, 1984 (Resolution No. 10165). Proposed amendments to the Downtown Plan were approved by the Board of Supervisors on September 10, 1985 and signed by the Mayor on September 17, 1985. The Plan with amendments took effect on October 17, 1985. The project would require exceptions to separation-of-towers setback requirements and

reduction of wind speeds. Under Section 309, the Commission will hold a public hearing on the project to review exceptions to the Code requested by the sponsor. After such hearing and making appropriate findings, the Commission may approve, disapprove or approve subject to conditions the building or site permit applications.

Following project approval by the City Planning Commission, the sponsor must obtain demolition, building and related permits from the Central Permit Bureau of the Department of Public Works.

III. ENVIRONMENTAL SETTING

A. LAND USE AND ZONING

LAND USE

The project site is in an area south of Market St. characterized by low-rise commercial and service buildings. Howard St. and the surrounding secondary streets contain a wide variety of support businesses which serve the nearby Central Office District. These include wholesaling, printing, building services and parking.

The eastern section of the newly created C-3-O (SD) Use District (formerly the C-3-S Use District), in which the project site is located, has experienced an expansion of new office buildings in recent years. This trend, in response to demand for office space in the downtown core, has extended major office development southward from Market St. to Howard St. The recent highrise construction on Howard St. in the vicinity of Spear and Main Sts. has been at a lesser intensity than that in the downtown core.

Howard St. in the project vicinity has not experienced similar new office construction. Due to lower rents, many professional offices have moved from the downtown core to offices in the Howard St. area. Offices in the vicinity include those of architects and engineers. Almost all of these professional offices are located in buildings dating after the 1906 earthquake through the 1920s. Rents in the area average about $18-$24 per sq. ft., compared with $30-$35 per sq. ft. in the downtown core./1/ Business offices are located north of Howard St., and for the most part north of Mission St.

A one-story brick building is located on the project site and is occupied by a commercial parking service available to the public. Both the building and an open area at the rear of the parcel are used for parking. Bordering the site to the east and west on Howard St. are recently renovated buildings being used as offices. At the intersection of Howard and First Sts., adjacent to the

east side of the project site, is the 500 Howard St. building, which includes a variety of business offices in which Bechtel and Miller-Freeman Publications are the primary tenants. Several design offices are the principal uses to the immediate west of the site. An elevated ramp from the Transbay Terminal is adjacent to these uses. The Transbay Terminal is located northeast of the site across Natoma and First Sts.

North of the bus ramps are small-scale buildings housing wholesaling, office and retail uses. Two highrise office developments are proposed for the portion of the project block bounded by Shaw Alley, Mission, First and Minna Sts.: 535 Mission St. and 100 First St. Golden Gate University, Pacific Bell, and other office and retail/restaurant development front the north side of Mission St. A highrise proposal is in the early planning stages at 526 Mission St. Stevenson Place (on Stevenson St. between First and Second Sts.) and Central Plaza (at First and Market) are two developments currently under construction north of Mission St. An 18-story building at 49 Stevenson was recently approved for construction. North across Mission St. from the Transbay Terminal is the Terminal Plaza building housing a restaurant and retail uses on the ground floor and offices above. The Fremont Center development has ground floor banking, a plaza and a retail building with restaurants.

East of the Transbay Terminal are primarily office buildings with some warehousing/wholesaling uses and retail/restaurant uses at ground level.

Parking lots and garages are also located in the area; parking lots are located below freeway ramps to the west and south. Across Howard St. from the site is the Daman Travel Agency at the corner of Howard and First Sts. There are several vacant or partially vacant buildings advertised for sale, such as 526 and 533 Howard St. The building at 515 Howard St. was demolished in late 1984 and a permit granted for interim (two years) parking use. The 525 Howard St. building was recently renovated. These buildings as well as others in the area generally range in height from one to four stories. The Sands Cafe faces the site across Howard St. Other uses include the 543 Howard Building which includes Takeuchi Brothers, Micro Images and Raincoat Sportswear as tenants. Circus Lithographers, My Chateau Restaurant and The Zibra Color Laboratory are businesses located between 579 and 591 Howard St. Tami Sportswear, a large

wholesaler, is located at 235 Second St. There are several smaller offices and two auto repair shops along Tehama St. A seven-story office building (201 Second St.) is proposed at the southeast corner of Second and Howard Sts. Figure 5, p. 22, shows land uses in the project vicinity.

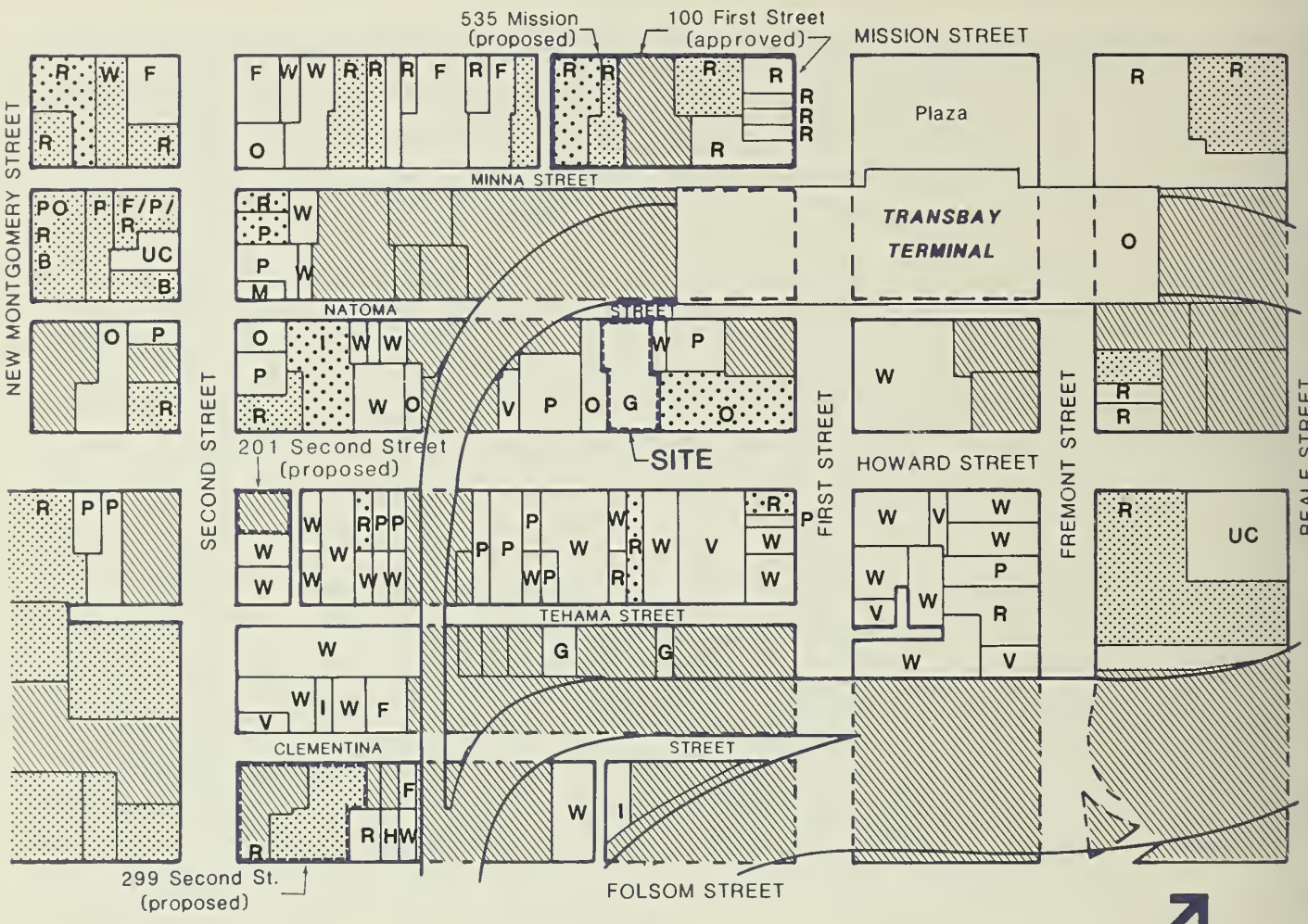
Several industrial buildings have been or are being converted to office uses in the project vicinity. One Hawthorne Center, at the corner of Hawthorne and Howard Sts., is a five-story building recently rehabilitated for office and commercial uses. A three-story masonry building at 144 Second St. has been converted to office space. Two new stories were added to the top of the building.

High-rise buildings south and west of the project site include an 18-story Pacific Bell equipment building on Folsom and Second Sts., and a 10-story Pacific Bell office building on Hawthorne St. just south of Howard St. Other large businesses in the project area south of Howard St. include the Parker Printing Company in the Phillips Building at 235 First St. and Fritzi Clothing manufacturers/wholesaler which occupy several buildings in the northern portion of the block bounded by Howard, First, Fremont and Folsom Sts.

ZONING

The Downtown Plan and related amendments to the San Francisco Master Plan were approved and adopted by the City Planning Commission on November 29, 1984. The Board of Supervisors adopted the Downtown Plan with amendments on September 10, 1985 and the Mayor signed the ordinances on September 17, 1985. The ordinances became effective October 17, 1985.

The project site is in a C-3-O (SD) (Downtown Office Special Development) Use District (see Figure 6, p. 23). This district contains office support businesses for the downtown core such as wholesaling, printing, building services and parking, and recent office development dating from about the 1960s at the foot of Howard St. Uses permitted in this district parallel those in the C-3-O, Downtown Office District. The Planning Code (Section 248) describes the purpose of this district as providing "for an orderly expansion of the financial district in a way that will maintain a compact downtown core,



GROUND FLOOR USE

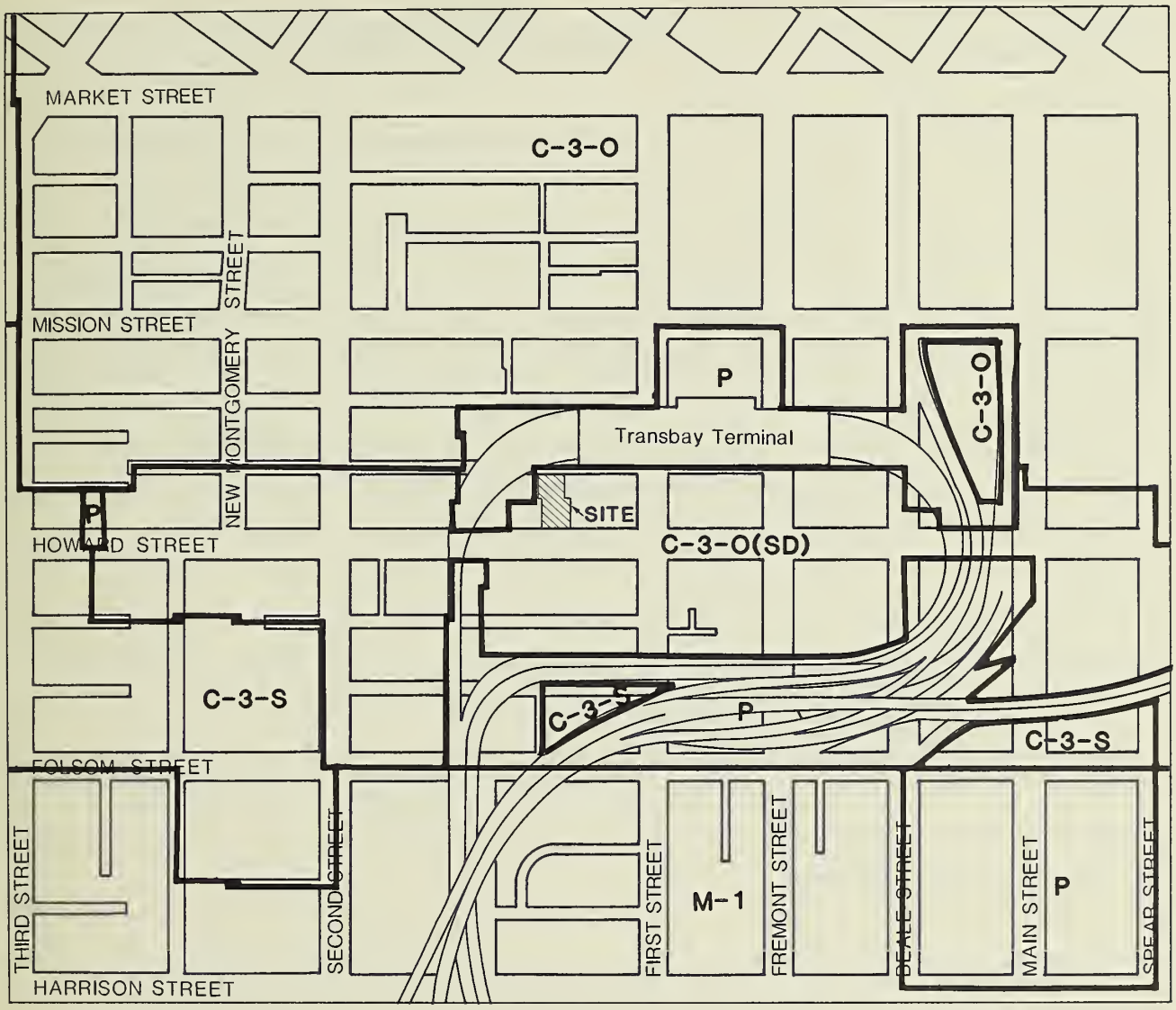
- O OFFICE
- W WHOLESALE
- R RETAIL/RESTAURANT
- F FURNITURE
- P PRINTING/PHOTOGRAPHY
- B BANK
- M MEDICAL CLINIC
- G SERVICE GARAGE
- H RESIDENTIAL
- I LIGHT INDUSTRIAL
- V VACANT
- PO POST OFFICE
- UC UNDER CONSTRUCTION
- PARKING

UPPER FLOOR USE

- OFFICE
- WHOLESALE

FIGURE 5
524 HOWARD
LAND USE IN PROJECT VICINITY

SOURCE: ESA



SITE

0 400
FEET

C-3-S	DOWNTOWN SUPPORT DISTRICT
C-3-O	DOWNTOWN OFFICE DISTRICT
C-3-O(SD)	DOWNTOWN OFFICE SPECIAL DEVELOPMENT DISTRICT
M-1	LIGHT INDUSTRIAL DISTRICT
P	PUBLIC USE DISTRICT

SOURCE:
SAN FRANCISCO PLANNING CODE
(DOWNTOWN PLAN AMENDMENTS)

FIGURE 6
524 HOWARD
PLANNING CODE USE DISTRICTS IN PROJECT VICINITY

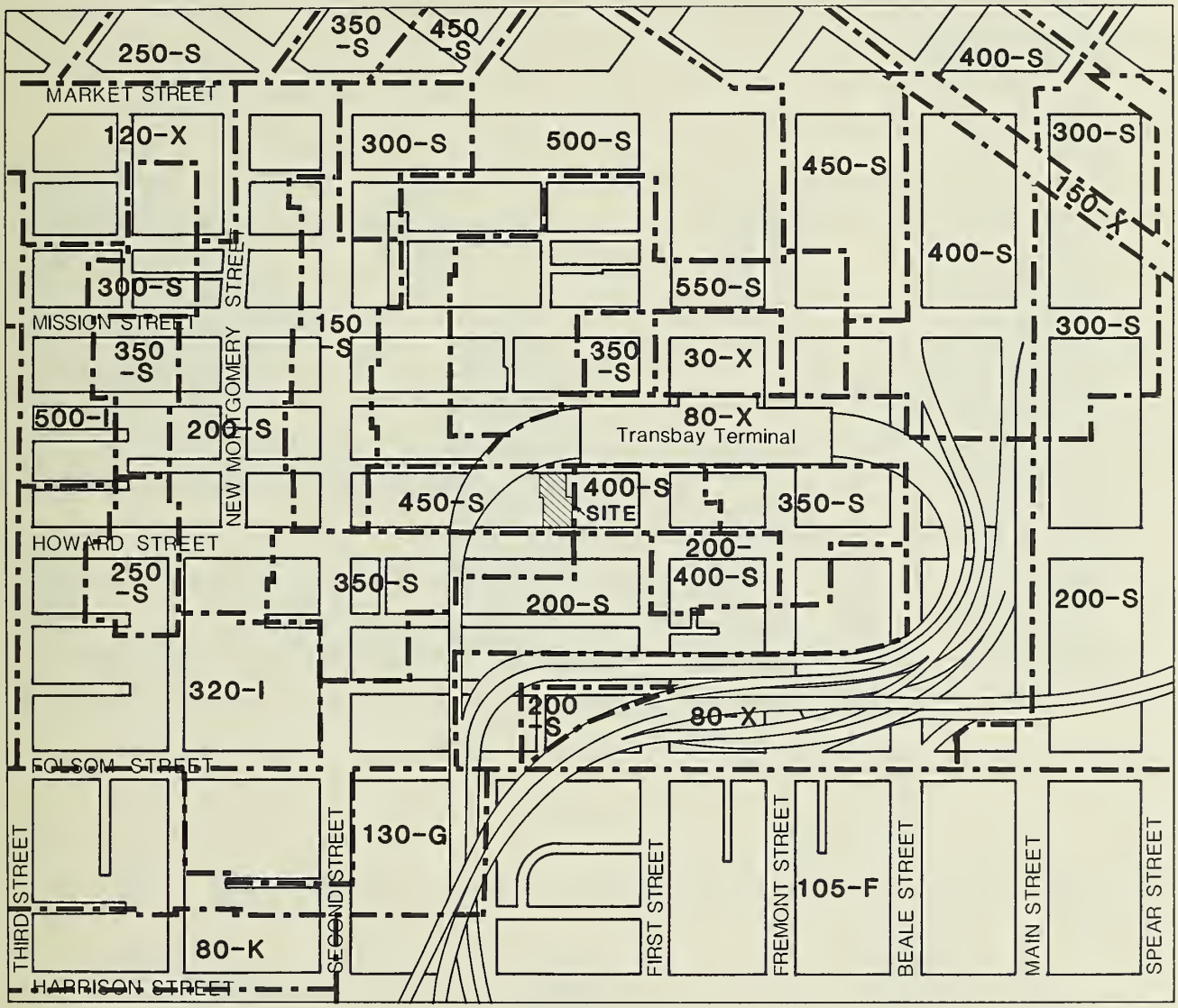
and to create an area in which to direct unused development potential of lots containing significant or certain contributory buildings."

The City Planning Code limits buildings in the district to a basic Floor Area Ratio (FAR) of 6:1 (Section 124 of the Planning Code); buildings may have a floor area, excluding mechanical and parking space and the ground floor generally, of up to six times the area of the site. Mezzanine level retail uses may also be excluded at the discretion of the City. The City Planning Code (Section 248) states that "Development at densities above the base floor area ratio in this area [south of Mission St.] is appropriate only if there is a commensurate reduction in the allowable density of development on other sites in the downtown by the transfer of development rights from eligible sites as provided in Section 128."

Retail uses are encouraged on the ground floor in C-3 districts. Open space is required in a ratio of one sq. ft. of open space per 50 gross sq. ft. of floor area. Open space may be developed off-site in satisfaction of this requirement. Art work which is easily visible and accessible to the public is required at a cost equal to 1% of the construction cost. The Plan also requires that a plaque with the name of the architect and year of construction be affixed to the building.

In recognition of the compact and congested nature of the downtown area, no off-street parking is required for any use (other than residential) in any C-3 district as stated in Section 161(c) of the City Planning Code. Parking is permitted to occupy up to seven percent of the gross floor area of a building as an accessory use without conditional use authorization. Section 152.5 of the City Planning Code requires 0.1 off-street freight-loading space per 10,000 gross sq. ft. of office use. Loading spaces are not required for retail uses of less than 10,000 gross sq. ft.

The site is in the 450-S Height and Bulk District (see Figure 7, p. 25), in which the maximum permitted height is 450 ft. The "S" zone divides buildings into three sections: the base, lower tower and upper tower. The base has no maximum length or diagonal dimensions but has a height limited to 1.25 times



NUMBERS INDICATE HEIGHT LIMITS.
LETTERS INDICATE BULK LIMITS AS FOLLOWS:

0 400
FEET

LETTER	HEIGHT ABOVE WHICH MAXIMUM DIMENSIONS APPLY	MAXIMUM BUILDING LENGTH	MAXIMUM DIAGONAL DIMENSION
F	80	110	140
G	80	170	200
I	150	170	200
K	60	250	300
S	SEE SECTION 270(d) OF THE PLANNING CODE		
X	BULK LIMITS NOT APPLICABLE		

SITE

SOURCE:
SAN FRANCISCO PLANNING CODE
(DOWNTOWN PLAN AMENDMENTS)

FIGURE 7
524 HOWARD
HEIGHT AND BULK DISTRICTS
IN PROJECT VICINITY

the widest abutting street, or 50 ft., whichever is greater. The lower tower zone has a maximum length of 160 ft., a maximum average floor size of 17,000 sq. ft., a maximum floor size of 20,000 sq. ft., and a maximum average diagonal dimension of 190 ft. The upper tower zone has a maximum length of 130 ft., a maximum average floor size of 12,000 sq. ft., a maximum floor size for any one floor of 17,000 sq. ft., and a maximum diagonal dimension of 160 ft.

Section 128 of the Planning Code provides for the transfer of development rights (TDR) from "preservation lots" containing architecturally important buildings to parcels in the same zoning district and from buildings in Conservation Districts to parcels in the C-3-O (SD) zones. Four categories of architecturally important buildings have been established: Category I (Significant - retain essentially intact); Category II (Significant - retain, but additions or replacement at rear may be allowed); Category III (Contributory - not in a Conservation District; encourage retention); and Category IV (Contributory - in a Conservation District; encourage retention; review alteration or replacement to preserve character of district).

NOTE - Land Use and Zoning

/1/ Bruce Breitman, The Breitman Company, telephone conversation, January 8, 1985.

B. URBAN DESIGN

The garage on the southern half of the project site is a brick structure with a high-ceilinged peaked roof. Windows and doors are arched. An arched window over the main entry gives the appearance of a second story. A cornice is implied by double scoring of the facade. Short-range views of the front and rear of the project site are shown in Figure 8, p. 27.

Howard St. is a 92-ft.-wide street. It is generally bounded by low-rise buildings, three to five stories in height, built to the front and side property lines (see Figures 9 and 10, pp. 28-29). Natoma St., in contrast, is a relatively narrow street (about 40 ft.); the low-rise buildings impart a more enclosed character to Natoma St. than to Howard St. Surface parking lots in the vicinity interrupt the street wall of building facades.

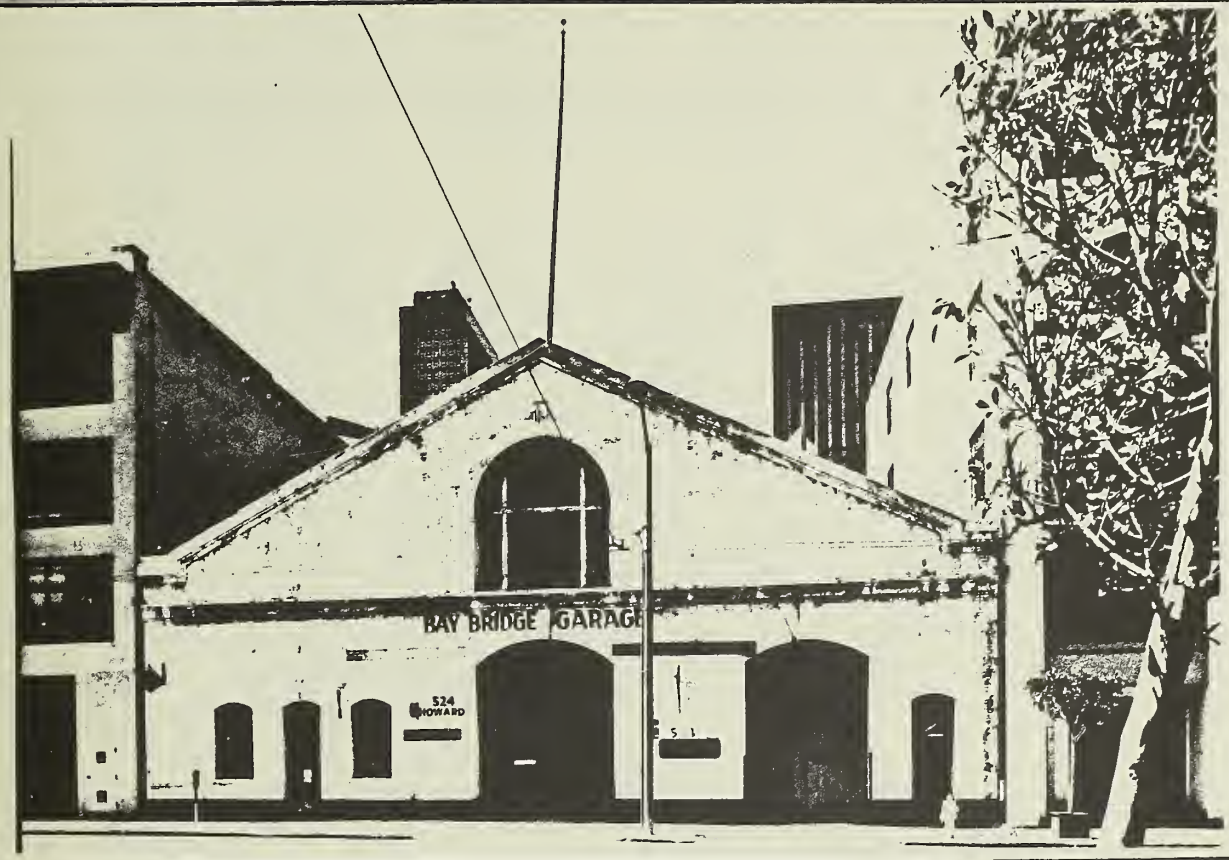


FIGURE 8
524 HOWARD
VIEWS OF THE SITE FROM HOWARD ST. (TOP PHOTO)
AND FROM NATOMA ST. (BOTTOM PHOTO)

SOURCE: ESA

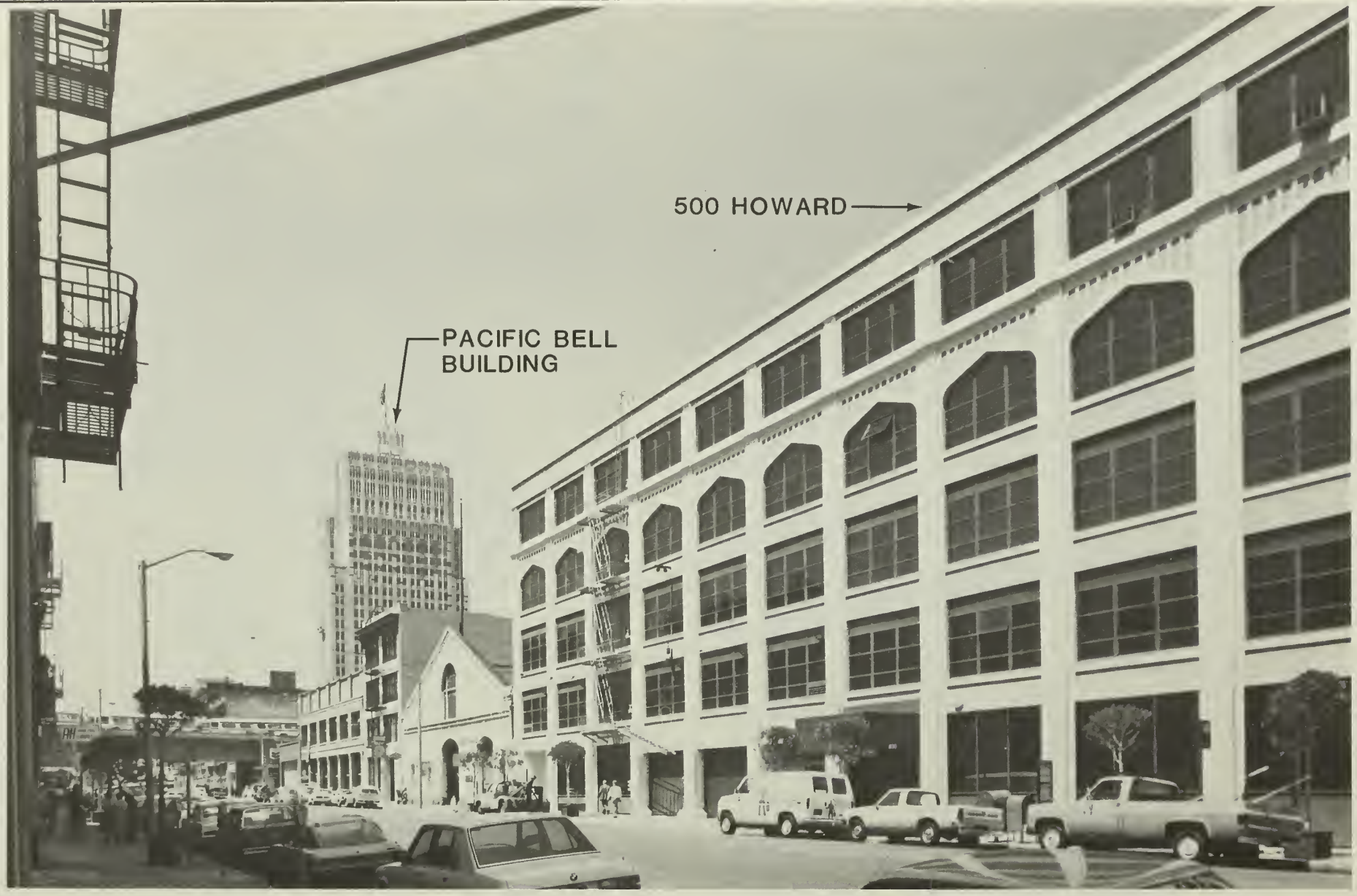


FIGURE 9
524 HOWARD
VIEW OF THE HOWARD STREET
FRONTAGE, LOOKING NORTHWEST

SOURCE: ESA

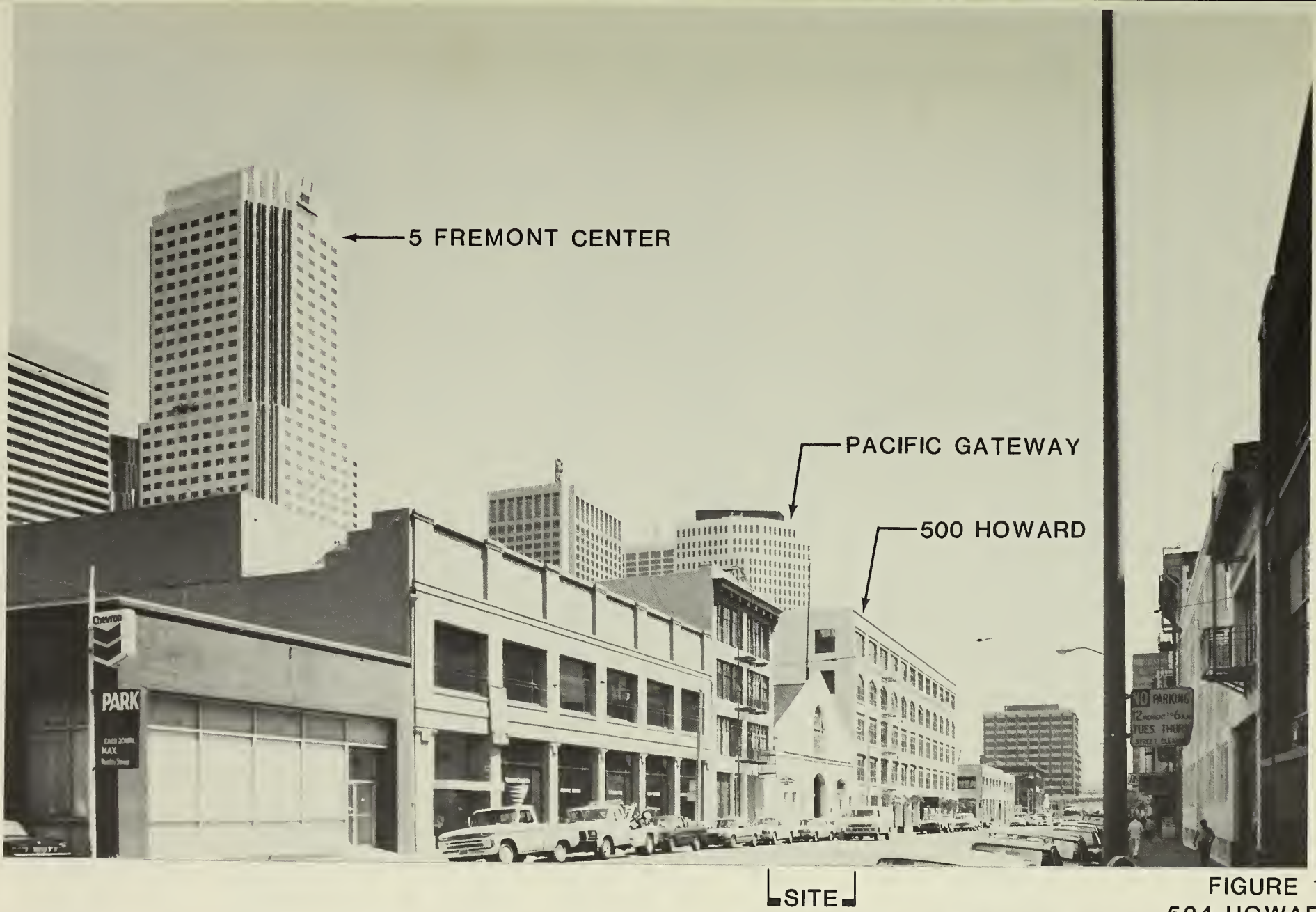


FIGURE 10
524 HOWARD
VIEW OF THE HOWARD STREET
FRONTAGE, LOOKING NORTHEAST

SOURCE: ESA

The project area is characterized by a variety of types, styles, colors and sizes of buildings, poorly maintained sidewalks and curbs, poorly defined building entrances, and fire escapes built onto the fronts of buildings. Buildings are mostly post-fire warehouse and industrial structures of brick or concrete. While not displaying a unified design, the buildings are compatible in scale and detailing. Most have ornamented facades. The architectural detailing of older structures in the area provides a sense of pedestrian scale through cornice lines, defined composition elements, and detailing around large windows.

Retail uses in the site vicinity include a travel agency at the southwest corner of First and Howard Sts. and a restaurant on the south side of Howard St. facing the project site. A grocery store is located at the northeast corner of Second and Howard Sts. Another restaurant is located on the south side of Howard St. west of the project site.

The view from the project site to the west along Howard St. includes the bus ramp leading from the Transbay Terminal. To the east is visible a freeway overpass leading to the Main St. exit and new office buildings of about 12 to 20 stories along Main and Spear Sts. The low-rise building on the project site is not visible from any medium- or long-range viewpoints.

C. SHADOW AND WIND

SHADOW

The existing site garage and buildings in the site vicinity are generally low-rise and cast relatively limited shadows. Existing and project shadow patterns for various times of the day and year are discussed in detail in Section IV.C, p. 58.

WIND/1/

US Weather Bureau and Bay Area Air Quality Management District data show that westerly (i.e., from the west), southwesterly and northwesterly winds are the most frequent and strongest winds during all seasons in San Francisco./2/

Of the 16 primary wind directions measured at the Weather Bureau station, four wind directions (northwest, west-northwest, west, and west-southwest) compose the greatest frequency of occurrence as well as the majority of strong wind occurrences in San Francisco./3/

Average wind speeds are highest during summer and lowest during winter months. However, the strongest peak winds occur during the winter, when average speeds of more than 34 mph or more for one hour have been recorded. The highest average wind speeds are in the mid-afternoon, and the lowest are in the early morning. Peak wind speeds are distributed evenly throughout the day.

Pedestrian Comfort and Wind Criteria

Wind conditions in San Francisco partially determine pedestrian comfort on sidewalks and in other public areas. In downtown areas, flat-walled high-rise buildings can redirect wind flows around the buildings and divert winds downward to street level; each can result in increased wind speed and turbulence at street level.

The comfort of pedestrians varies under different conditions of sun exposure, cool and warm temperatures, light and heavy clothing, and various wind speeds. Existing wind speeds at 20 locations tested in the project vicinity range from four to ten mph with 18 of the 20 values seven mph or less. The windiest location is on Howard St. across from the project (location 15, see Appendix B, Figure B-1, p. A-22).

With the intent to provide a comfortable wind environment for people in the downtown, Section 148 of the City Planning Code establishes an equivalent (including the effects of turbulence) windspeed (as defined in the Code) of 11 mph as the comfort criterion and 26 mph as the wind hazard criterion. Section 148 sets comfort levels of 11 mph equivalent wind speed for areas of substantial pedestrian use and seven mph for public seating areas. New buildings and additions to buildings may not cause ground-level winds that would exceed these levels more than 10% of the time year round between 7:00 a.m. and 6:00 p.m. Exceptions may be requested under Section 309 of the City

Planning Code. No building or addition that would cause wind speeds to exceed the 26 mph hazard level for a single hour of any year would be permitted.

NOTES - Shadow and Wind

/1/ This section is based on a study entitled "Wind-Tunnel Study of the 524 Howard Building", August 1985, prepared by Bruce White, Ph.D. as a private subconsultant to Environmental Science Associates, Inc. A summary of the study findings is included in Appendix B, p. A-19, and the study data are on file at the Department of City Planning, Office of Environmental Review, 450 McAllister St.

/2/ The US Weather Bureau data were collected from 1891 to 1930 at 465 California St., near Montgomery St. The Bay Area Air Quality Management District data were collected in the mid-1970's at 939 Ellis St., near Van Ness Ave. (The BAAQMD station is now at 900 23rd St.)

/3/ The US Weather Bureau data used in this analysis were originally acquired at the weather station atop the old Federal Building at 50 United Nations Plaza during the years 1945-47 hourly on an annual basis for 16 wind directions.

D. HISTORIC, ARCHITECTURAL AND CULTURAL RESOURCES

HISTORIC AND ARCHITECTURAL RESOURCES

The San Francisco Department of City Planning conducted a citywide inventory of architecturally significant buildings in 1976. In the 1976 Department of City Planning Architectural Inventory, approximately ten percent of the City's entire stock of buildings were awarded a rating for architectural merit ranging from a low of "0" to a high of "5". The total number of buildings which were rated from "3" to "5" represent less than two percent of the City's entire building stock.

The Foundation for San Francisco's Architectural Heritage (Heritage) conducted a survey which assigned ratings to buildings in the C-3 District. The survey rated buildings from a high of "A" (Highest importance) to "D" (Minor or No Importance). The criteria used in the evaluation were based on guidelines of the National Trust for Historic Preservation, the National Register of Historic Places, and the State Historic Resources Inventory.

The Downtown Plan categorizes historically and architecturally significant buildings into either Category I and II (significant buildings) or

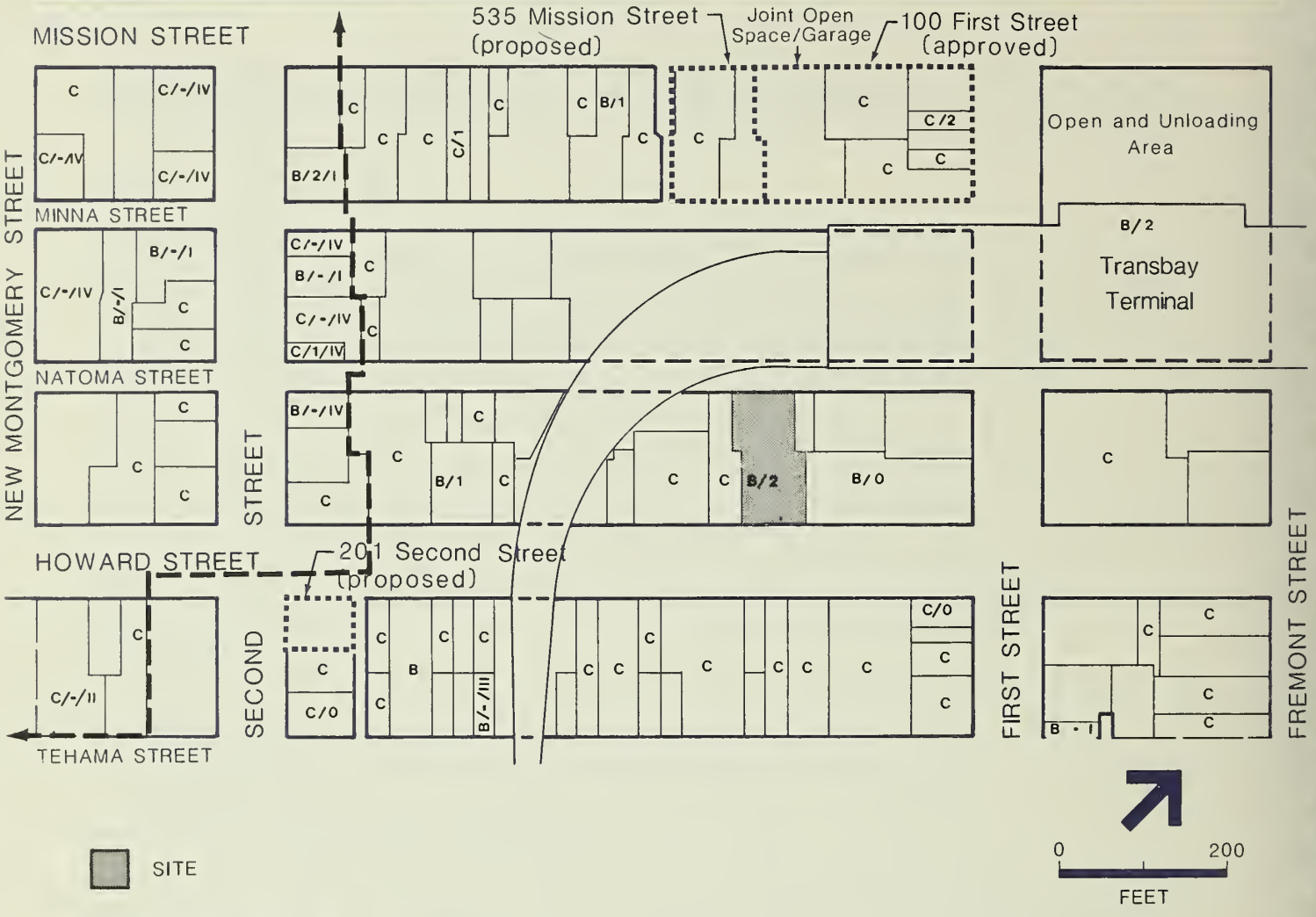
Category III or IV (contributory buildings). It is the intent of the Downtown Plan that those buildings categorized I, II, III or IV are to be protected within the C-3 area.

Several buildings of architectural and historical significance exist in the project area. In the 1976 Department of City Planning architectural inventory, the Printing Arts building at 500 Howard St. was rated "0", while the F.C. Janssen building was rated "1". No other buildings within two blocks of the project site were rated in the 1976 DCP survey. The project block includes three Heritage "B" rated buildings/1/ in addition to the site building: the Printing Arts building, the F.C. Janssen building and the Electrical building; the block also contains six "C" rated buildings. The Downtown Plan categorized six buildings on the project block.

The project block contains nine buildings the architecture of which is rated as individually and/or contextually important (see Figure 11, p. 34). These include the building adjacent to the project site on the east, 500 Howard (the Printing Arts building), and a Geilfuss and Son structure at 568-76 Howard, the F.C. Janssen building. On the corner of Second and Natoma Sts. is the Electrical building, designed by J.C. Pelton and completed in 1906. Figure 11 identifies those buildings in the project area included in (1) the Department of City Planning 1976 Architectural Inventory, (2) the Heritage Survey, and (3) The Downtown Plan.

In addition to the building-specific survey, the Downtown Plan identifies conservation districts in which review procedures would apply for unrated as well as significant and contributory buildings. One of the districts, the New Montgomery-Second District, is located about half a block west of the site and encompasses the buildings fronting Second St. on the site block.

Heritage identified groups of buildings that meet the criteria for listing on the National Register of Historic Places as historic districts. One of these groupings, New Montgomery and Market St. District, is about one and one-half blocks from the project site; it does not include the project block. Heritage describes this district as "a cohesive, architecturally distinguished grouping," "largely representative of the post-fire City" and other periods.



SITE

DOWNTOWN PLAN
NEW MONTGOMERY - SECOND ST.
CONSERVATION DISTRICT

KEY TO RATINGS

B/2/III	HERITAGE/DCP/ DOWNTOWN PLAN
B,C	HERITAGE RATING (1979 AND 1982, C-3 DISTRICTS ONLY)
0-2	DCP RATING (1976, CITYWIDE)
I-IV	DOWNTOWN PLAN CATEGORIES (1984, C-3 DISTRICTS ONLY)

FIGURE 11
ARCHITECTURAL RESOURCES IN THE PROJECT VICINITY

SOURCE: ESA

The building on the project site was not included as a contributory or significant building in the Downtown Plan. This building was included in the 1976 Architectural Inventory and was given a summary rating of "2". This building was also rated "B" in Heritage's survey, which describes it as a "post fire South of Market industrial reconstruction."/1/

The building on the project site, previously known as the California Boiler Works, was designed by Henry Geilfuss and Son and completed in 1910 as an industrial building. This one-story brick building has several deep-set arched openings at street level, two large vehicle entrances, two pedestrian entrances and several windows. The low window sills and the variety and shape of openings at street level provide the lower portion of the building with a pedestrian scale. Above, a horizontal cornice delineates the upper level (implying a second floor) and a large, arched, multi-panel window is framed by a pitched parapet with a flagpole at its center. The exposed wood trim ceiling is visible through this window. On this south-facing front, shadows articulate the brickwork, and the inset windows and doors give a sense of depth to the facade.

CULTURAL RESOURCES

An archaeological resources report titled "Cultural Resources Evaluation of Five South of Market Parcels, San Francisco," was prepared for the proposed site by Allen Pastron, Ph.D., Archeo-Tec, and is on file with the Office of Environmental Review, Department of City Planning, 450 McAllister St., San Francisco.

The investigation does not provide conclusive evidence to support the presumption of the presence on site of cultural resources of potential significance. The South of Market area remained in a natural state until the Gold Rush. It was an area of steep sand hills and adjacent hollows covered with a blanket of vegetation, consisting primarily of scrub oak, willows and thick underbrush of various types.

The site was located on the flank of a sand hill, so that the site would have been cut rather than filled when the area was developed. The earliest

recorded history in the vicinity of this site dates from the Gold Rush period (1849-1857) when the site was located at the periphery of Happy Valley, where tents and other temporary dwellings were set up by goldseekers. The area supported a number of iron foundries and working class residential neighborhoods into the City Building Period (1848-1886), and the area's industrial nature was firmly established. The nature of the area remained unchanged through the late 19th-early 20th century periods. While most of the pre-earthquake and fire buildings were destroyed by fire, the new buildings continued to house industrial uses and working class residences. Most recently, in 1929, the site contained the California Boiler Works (constructed in 1910) and a scrap iron dealer. The California Boiler Works building is still on the site, in use as a garage, and it is this use that would be removed to make way for the proposed project.

The site conditions at the time of the Gold Rush consisted of sand dunes. Since that time, cutting occurred (after 1958, as part of a general leveling of the area), leaving the site relatively flat. While it is possible that artifacts from the City Building or later periods could be present on the site, archival research has produced no compelling evidence to suggest that any of these materials would be particularly noteworthy from the perspective of history or archaeology.

NOTE - Historic, Architectural and Cultural Resources

/1/ Buildings rated "B" are recognized by Heritage to be of "Major Importance" by virtue of architectural, historical and environmental criteria. These buildings are important for their overall quality rather than for any particular outstanding characteristics.

E. TRANSPORTATION

The project site is located within the Downtown Core, desginated in the Downtown Transportation Plan of the Transportation Element of the San Francisco Comprehensive Plan. "The density of daytime population in the downtown and the resulting density of trips calls for movement of people to take place in the most efficient and least space-consuming modes of transportation such as public transit. This in turn calls for the maintenance of downtown as an area in which automobile use is controlled."/1/

Howard St. at the project block is one-way westbound and has three travel lanes with the addition of a fourth travel lane from 4:00 p.m. to 6:00 p.m. due to the restriction of parking in the north curb lane during that period. Howard St. is designated as a "transit preferential street" in the Transportation Element, on which the flow of Muni vehicles is to be expedited.

Second St. operates as a two-way, four-lane street and is designated as a "transit preferential street" south of Howard St. First St. is one-way southbound with three lanes, and is also designated as a transit preferential street. Natoma St. is a narrow one-way, eastbound street.

Mission St. operates as a two-way, four-lane street. The outer lanes are designated diamond lanes for bus-only use from 7:00 a.m. to 6:00 p.m.

Freeway connection with the East Bay is provided at First and Harrison Sts. (on ramp) and at Fremont between Howard and Folsom Sts. (off ramp). Freeway connection with the Peninsula is provided by a pair of ramps at Fourth and Harrison Sts. (on) and Fourth and Bryant Sts. (off). Another set of ramps connecting with the Peninsula and the East Bay is at Beale and Mission Sts. (on) and Main and Mission Sts. (off).

The site is served by San Francisco Municipal Railway (Muni) electric trolley and motor coach lines, providing radial service to and from the downtown area. Muni Metro light rail vehicle lines are accessible via the Montgomery St. Station on Market St. two blocks north of the project, at Montgomery and Second Sts. Muni and BART routes in the project vicinity are shown in Figure 21, p. 83. Table 5, p. 98, shows the existing p.m. peak-hour conditions on the Muni and other transit systems.

Regional transit service to the site is provided to and from the East Bay by the Bay Area Rapid Transit District (BART) at the Montgomery St. Station on Market St., and by AC Transit motor coaches at the Transbay Terminal, located on Mission St. at First St., north of the site.

Service to the Peninsula is provided jointly by CalTrans and the Southern Pacific Transportation Company (SP) from a train terminal at Fourth and Townsend Sts.; by the San Mateo County Transit District (SamTrans) from bus

routes and stops along various streets in the area, primarily on Mission St. west of First St. (SamTrans Route 7A runs south on Montgomery St., as part of a peak-period route to San Mateo and Foster City, with stops on Montgomery St. at Clay St. and at California Sts.); and by BART, which provides transfers to SamTrans routes at the Daly City BART Station. Independently owned and operated jitneys provide service along the entire length of Mission St. (from the Embarcadero to Daly City) during a.m. and p.m. peak hours.

The Golden Gate Bridge, Highway and Transportation District (Golden Gate Transit) provides a.m. and p.m. peak-period bus service to Marin and Sonoma counties from boarding stops (p.m.) along Howard St., at the Transbay Terminal, and along Sansome St. Discharge stops (a.m.) are located along Folsom St., at the Transbay Terminal, and along Battery St. Golden Gate Transit provides ferry service to terminals in Larkspur and Sausalito from the Ferry Building, about eight blocks east of the site.

Golden Gate Transit also operates a vanpool program to North Bay areas not served by existing motor coach routes. The RIDES carpool program operates as a nonprofit, publicly funded corporation, and provides consulting and matching services to help establish Bay Area carpools and vanpools. Currently, there are about 600 carpools on the Golden Gate Bridge during the a.m. peak hour, carrying about 2,200 people (average occupancy of 3.6 persons per vehicle)./2/ The Bay Bridge has about 2,800 carpools during the a.m. peak hour, carrying about 10,900 people daily (an average occupancy of 3.3 persons per vehicle)./3/

Pedestrian activity around the site during the peak periods of 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. is directed primarily from and to transit and parking facilities. Peak afternoon pedestrian flows are generally more intense than those of the morning period. Noon-hour flows are generally equivalent to or more intense than the afternoon flows, and are directed primarily to restaurants and retail stores within the downtown area.

Sidewalk widths on Howard St. in front of the project site are restricted by street signs, a fire hydrant and parking meters, resulting in an effective clear width of 9.5 ft., about 80% of the full building-to-curb width of 12 ft. The Howard St. sidewalk in front of the project site operates in open

conditions during the noon hour and at the lower end of the unimpeded range during the p.m. peak hour./4/ Appendix C, Table C-2, p. A-27 describes pedestrian flow conditions (open, impeded, etc.).

The Natoma St. sidewalk at the rear of the site has an effective width of three ft., 60% of the clear width of five ft. This sidewalk operates in open conditions during the noon hour and at the lower end of the unimpeded range during the p.m. peak hour.

Crosswalk flows across First St. at Howard operate in unimpeded conditions during both the noon and p.m. peak hours. Existing pedestrian flows across Howard St. at First St. operate at the upper range of unimpeded conditions during the noon hour and the lower range of impeded conditions during the p.m. peak hour. Crosswalk flows across Second St. at Howard St. operate in the mid-range of unimpeded conditions during both noon and p.m. peak hours. Crosswalk flows across Howard St. at Second St. operate at the lower ends of the unimpeded and impeded ranges during noon and p.m. peak hours, respectively.

The estimated parking demand (both long-term and short-term) from the C-3 District in 1984 was found to be about 45,300 spaces, which would occupy about 94% of the 48,000 parking spaces in and near the C-3 District.

NOTES - Transportation

/1/ San Francisco Department of City Planning, January 1983, Transportation, an Element of the Master Plan.

/2/ Maria Thayer, Golden Gate Bridge, Highway and Transportation District, telephone conversation, December 2, 1985.

/3/ Traffic Survey Services MA-64, Bay Bridge, Metropolitan Transportation Commission, Spring 1985.

/4/ All pedestrian flows are based on counts performed by Environmental Science Associates, Inc., on Thursday, February 16, 1984.

F. AIR QUALITY

The Bay Area Air Quality Management District (BAAQMD) operates a regional monitoring network which measures the ambient concentrations of six air pollutants: ozone (O_3), carbon monoxide (CO), total suspended particulates

(TSP), lead (Pb), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). On the basis of the monitoring data, the Bay Area, including San Francisco, currently is designated a non-attainment area with respect to the federal ozone and CO standards. A four-year summary of the data collected at the BAAQMD monitoring station nearest the project site (about 2.3 miles south at 900 23rd St.) is shown in Appendix D, p. A-33, together with the corresponding federal and/or state ambient air quality standards. In 1984, there was one violation of the state ozone standard, one violation of the federal and state eight-hour CO standards and five violations of the previous state 24-hour average TSP standard; in 1983 there was one violation of the federal and state one-hour average ozone standards and four violations of the previous state 24-hour average TSP standard; and in 1982 there was one violation of the federal and state eight-hour CO standards, and three violations of the state 24-hour average TSP standard./1/

BAAQMD has conducted two CO "hotspot" monitoring programs in the Bay Area, including San Francisco. One CO monitoring program was conducted during the winter of 1979-80 at the intersection of Washington and Battery Sts. in San Francisco, about 0.6 miles north of the site./2/ The high eight-hour average concentration was 10.1 ppm, which violates the 9-ppm state and federal standards by 1.1 ppm. The high one-hour average concentration of 15 ppm does not violate the 20-ppm state standard or the 35-ppm federal standard. Another CO monitoring program was conducted during the winter of 1980-81 and included the San Francisco intersections of Geary and Taylor Sts., about 0.8 miles west of the site, and at 100 Harrison St. at Spear, about 0.4 miles east of the site./3/ At Geary and Taylor the observed high eight-hour average concentration was 11.5 ppm, which violates the standards by 2.5 ppm, and the high one-hour concentration was 15 ppm, which does not violate standards. At Harrison St. the observed high eight-hour and one-hour average concentrations were 7.8 ppm and 13 ppm, respectively, which do not violate standards. These data indicate that locations in San Francisco near streets with high traffic volumes and congested traffic flows may experience violations of the eight-hour CO standard during adverse meteorological conditions.

Comparison of these data with those from other BAAQMD monitoring stations indicates that San Francisco's air quality is among the least degraded of all the developed portions of the Bay Area. Two of the three prevailing winds,

westerly and northwesterly, blowing off the Pacific Ocean reduce the potential for San Francisco to receive pollutants from elsewhere in the region.

San Francisco's air quality problems, primarily CO and TSP, are due largely to pollutant emissions from within the City. CO is a non-reactive pollutant and its major source category is motor vehicles. CO concentrations are generally highest during periods of peak traffic congestion. TSP levels are relatively low near the coast, increase with distance inland, and peak in dry, sheltered valleys. The primary sources of TSP in San Francisco are demolition and construction activities, and motor vehicle travel over paved roads.

San Francisco contributes to regional air quality problems, including ozone, which affects other parts of the Bay Area. Ozone is not emitted directly from sources, but is produced in the atmosphere over time and distance through a complex series of photochemical reactions involving hydrocarbon (HC) and nitrogen oxide (NOx) emissions, which are carried downwind as the photochemical reaction occurs. Ozone standards are exceeded most often in the Santa Clara, Livermore and Diablo Valleys, because local topography and meteorological conditions favor the build up of ozone and its precursors there.

In 1982, motor vehicles were the source of 86% of the CO, 46% of the HC, 44% of the TSP, and 56% of the NOx emitted in San Francisco, while power plant fuel combustion was the largest single source of sulfur oxides (SOx), about 33% of the total./4/ These percentages are expected to apply reasonably well to current conditions.

In response to the Bay Area's ozone and CO non-attainment designations, the Association of Bay Area Governments (ABAG), BAAQMD, and the Metropolitan Transportation Commission (MTC) prepared and adopted the 1982 Bay Area Air Quality Plan, which establishes pollution control strategies to attain the federal ozone and CO standards by 1987 as required by federal law./5/ These strategies were developed on the basis of detailed subregional emission inventories and projections, and mathematical models of pollutant behavior, and consist of stationary and mobile source emission controls and transportation improvements. The BAAQMD, MTC, and California Bureau of

Automotive Repair (a state agency) have primary responsibility for implementation of these strategies.

NOTES - Air Quality

/1/ State standards for particulate matter changed in 1983 to concentrate on fine particulate matter which has been demonstrated to have health implications when inhaled. Concentration standards have also changed. There is not yet an adopted method for monitoring fine particulate matter. Until the State adopts a method, it is not possible to determine what proportion of TSP in San Francisco would be subject to review against the new standards.

/2/ Association of Bay Area Governments (ABAG), AQMP Tech Memo 33, "Summary of 1979/1980 CO Hotspot Monitoring Program," Berkeley, California, June 1980.

/3/ ABAG, AQMP Tech Memo 40, "Results of the 1980/1981 Hotspot Monitoring Program for Carbon Monoxide," Berkeley, California, January 1982.

/4/ Bay Area Air Quality Management District (BAAQMD), "Base Year 1982 Emissions Inventory, Summary Report," San Francisco, California, November 1, 1982.

/5/ ABAG, BAAQMD and MTC, 1982 Bay Area Air Quality Plan, Berkeley, California, December 1982.

G. EMPLOYMENT AND HOUSING

ON-SITE EMPLOYMENT

The site is currently used for parking. The company operating the parking garage has one employee on the site.

SAN FRANCISCO AND REGIONAL EMPLOYMENT, OFFICE SPACE

San Francisco is the major office center in the Bay Area, with approximately 60.6 million gross square feet of office space at the end of 1982. The C-3 district had 55.3 million sq. ft. of office space in 1981 and about 62.1 million sq. ft. in 1984./1/ During the 1970s, space in downtown office buildings was added at a rate of about 1.5 million gross sq. ft. per year. Between 1980 and 1983, space was added at an average rate of about 2.7 million gross sq. ft. per year. Approximately 36.1 million gross sq. ft. of net new office space was constructed between 1960 and 1983 (see Appendix F, p. A-36). Office space projections in the Downtown Plan EIR indicate that the C-3

district would contain about 70.5 million gross sq. ft. of office space by 1990, and 78.9 million gross sq. ft. of office space by 2000./2/

Vacancy Rates and Commercial Rents

On the basis of a 1984 citywide survey of 319 office buildings, the San Francisco Building Owners and Managers Association (BOMA) reported a citywide vacancy rate of 6.8%./3/ This rate is a decrease from the 7.1% rate reported by BOMA in its October 23, 1983 survey. According to a June 1985 Coldwell Banker survey, the vacancy rate in downtown San Francisco office buildings (new, existing and major renovations) was 11.8%./4/ The 11.8% rate is an increase from 10.9% reported in March 1985 by Coldwell Banker. The vacancy rate for June 1985 is the highest that has been reported for San Francisco since Coldwell Banker started this survey in 1978; it is the eleventh lowest of the 33 metropolitan areas surveyed by Coldwell Banker. For comparison, as of June 1985 the office vacancy rate was 16.1% nationally; 11% in Chicago; 18.4% in Dallas; 7.4% in downtown Manhattan, and 17.2% in San Jose./4/ San Francisco vacancy rates reported by both BOMA and Coldwell Banker in 1981 were about 1%.

The surveys indicate a general trend of increasing vacancy rates for downtown San Francisco office buildings over the last four years. This increase is the result of several factors, including an increase in the amount of available office space (new space being completed and space available for sublease), a decrease in the demand for office space, and the nationwide economic recession. Highrise vacancy rates point to a softer office market than has existed in recent years. Coldwell Banker reports that the rise in vacancy rates "is consistent with the upward trend exhibited since September 1983. More new office space was completed than in the previous quarter, leading to the increased vacancy rate."/4/ Space nearing completion in new buildings may result in higher vacancy rates than existed in the late 1970's and early 1980's.

There has been a concurrent demand for and development of office space elsewhere in the Bay Area, as well as increasing vacancy rates in those areas experiencing large amounts of office development. Some businesses have moved their clerical, support and production departments to outlying areas while

maintaining headquarters and main branch offices in San Francisco. In particular, the City of Oakland, and San Mateo and Contra Costa counties experienced increased demand for office space. For example, about 17 million sq. ft. of office space is proposed or under construction along the U.S. 101 corridor in San Mateo County./5/ Projects are included which are in various stages of public review and not all may be approved or built.

As a result of demand and increasing operating costs in San Francisco, land prices, construction costs, interest rates and annual rents for office space in the downtown financial district have more than tripled in the last decade, from $8.50 per sq. ft. in 1970 to approximately $30 per sq. ft. in 1981. New buildings have the highest rents, while rents in older buildings South of Market are less, averaging between $15 and $25 per sq. ft./6/ The rents for new office space in San Francisco ($28 to $40) are about 40 to 60% higher than commercial rents in Oakland ($20 to $25 per sq. ft.); the Peninsula ($18 to $22 per sq. ft.); and Walnut Creek ($22 to $27 per sq. ft.)./7/ The recent rise in vacancy rates could mean reduced pressure for higher commercial office rents and in lower rents and increased choices for lessees in terms of size, layout and location of office space.

RESIDENCE PATTERNS AND HOUSING

Introduction

From the cumulative perspective, two aspects of the analysis of housing-related impacts are important - residence patterns and housing market implications. Residence patterns are simply a description, through the use of absolute amounts and percentages, of where downtown workers live. The residence patterns describe workers only; they do not apply to the total population. Analysis of these patterns is useful in assessing the degree to which San Francisco residents benefit from job growth, in estimating travel demand, in considering the relationship between downtown job growth and labor force and housing throughout the region, as well as in considering the housing market effects of development. Residence patterns alone are not a description of housing market impacts in terms of the overall availability or price/rent of housing. In the setting discussion in this EIR, the residence patterns of C-3 District workers describe how many C-3 District workers live in San

Francisco and what proportion these San Franciscans represent of all employed San Franciscans. The number of C-3 District workers living elsewhere in the Bay Area is also described in this way.

This discussion uses citywide and regional demographic, labor force, and employment data and trends to illustrate relationships that are important to understanding the context for where people live and work. These relationships include the employed population relative to total population, the number of households and housing units relative to total population, employment growth relative to population growth, and the supply of housing in one location relative to others. These relationships, which reflect demographic and housing market factors, are indicators of how and why the residential distribution of C-3 District workers has changed in the past and might continue to change in the future.

The discussion of housing market implications focuses on the link between employment growth and the availability and price of housing, how changes in the housing market could affect various groups of consumers, and how residents' circumstances could change as a consequence of these effects.

As background for the subsequent cumulative impact discussion (Section V.I), this section presents current residence patterns for downtown workers, discusses trends in labor force, employment and population for the City and the region, and describes current housing market conditions in San Francisco and the region.

Residence Patterns for San Francisco and the Region/8/

Residence Patterns of the C-3 District Workforce

Residence patterns describe the distribution of workers by where they live. Most of the estimated 286,000 C-3 District workers (159,000 or 56%) live in San Francisco in 1984. The next largest group (73,000 or 26%) live in the East Bay, fairly evenly divided between Alameda and Contra Costa Counties, with a relatively small number in Solano and Napa Counties. About 35,000 workers (12% of the total) live in the Peninsula, most in San Mateo County; and about 19,000 (7%) live in the North Bay, most in Marin County.

Another perspective on where workers live compares the C-3 District workers living in a certain area to the total employed population of that area. In 1984, C-3 District workers represent a relatively large share (45%) of the total employed population in San Francisco. (This means that the remaining 55% of San Francisco's employed residents work elsewhere in the City or outside of San Francisco; most work elsewhere in the City.) C-3 District workers living in other parts of the region represent considerably smaller shares of the employed population in each of these other areas (less than 10% in each county outside of San Francisco).

It is important to understand the difference between the two perspectives used above to describe the residence patterns of C-3 District workers. Both describe the same groups of workers. In each case, the same estimate of the number of C-3 District workers living in a certain area is compared to an estimate for a larger group: first, to all C-3 District workers, and second, to all employed residents of the area in which they live.

Changing Conditions and Trends/9/

The conditions described above are not static, and in fact, have been changing over time. Trends indicate that the number of San Francisco workers who live in the City is increasing. The percentage that they represent of total City employment is declining. Changes in population, housing, labor force and employment in San Francisco and the rest of the region provide background for these trends./10/

Changes in the demographic composition of the City's population have resulted in growth in the number of employed persons (an increase of 24,200 from 1970 to 1980) despite the overall decline in total population (a decrease of 36,700 from 1970 to 1980). The growth of employed persons largely reflects higher labor force participation than in the past since the number of people in their working years (ages 16-64) has been relatively constant.

The number of households and housing units in the City has continued to increase, although by a relatively small amount. Given the population decline, the average number of persons per household has also decreased, while the number of adults and of employed adults per household has increased.

Demographic trends related to the population and labor force characteristics of the region outside of San Francisco show similarities to the trends for the City described above. From 1970 to 1980, the growth of employed persons exceeded the growth of the total population. Employed residents in the rest of the region increased by 670,000 (nearly 45% growth) over these 10 years, while population increased by 588,000 persons (about 15% growth). This reflects both the passing of the "baby boom" generation into their labor force years and the increasing labor force participation of women. The growth of employed residents exceeded the growth of households and of housing units, so that the average number of workers per household increased. The main differences between San Francisco and the rest of the region are the magnitudes of the changes, as the amount of growth in population and employed persons was much larger in the rest of the region than in San Francisco.

In the midst of these changes in population and labor force, business activity and employment have continued to grow in San Francisco. Jobs have grown at a faster rate and by a larger amount than the number of employed residents in the City. Thus, although the number of San Francisco jobs held by City residents has increased, the percent of jobs held by residents has declined. There has been a corresponding increase in the percentage of San Francisco jobs held by persons living elsewhere in the region. This indicates the increasing relative importance of housing and labor force outside of San Francisco to jobs in the City.

When considered from the perspective of City residents, the number of employed City residents working in San Francisco increased from 1970 to 1980. Although the percentage of residents working in San Francisco remains high (86% in 1980), this percentage has been declining. In other words, the rate of growth of employed City residents working in San Francisco is being outpaced by the rate of growth of employed City residents working elsewhere. Reasons for this trend include the large growth of jobs in other counties of the region and the relocation of some San Francisco jobs to other counties. (San Francisco's share of total regional employment has declined, even though the City's employment has increased substantially.) Another factor is the increase in households with more than one worker, which increases the likelihood that some workers will commute to jobs outside the City.

The trends described above incorporate a combination of many individual changes in employment and place of residence. Changes in the place of residence of San Francisco or C-3 District workers occur as individuals are newly employed in San Francisco or the C-3 District, who had not previously worked there, and as both existing and newly employed workers move within the region.

The changes which result in individuals being newly employed in the City (who had not previously worked there) can affect overall residence patterns if those newly employed have different household and housing characteristics from those whom they replaced or from all other workers in the City. They are likely to have different characteristics if the mix of types of jobs is changing (such as more office jobs relative to other types of employment), if the demographic characteristics of the work force in general are changing (such as changes in age distribution or ethnic/racial characteristics) or if there are changes in the distribution of the labor force within the region (such as more growth of labor force members in the areas surrounding San Francisco than in the City itself or substantially larger growth in San Francisco employment than in employed City residents).

Changes in residence patterns also reflect housing market factors. Housing market factors have been particularly important in the recent past since the housing choices (housing types, prices, rents, locations) available have changed dramatically over the past five to ten years. Housing is now more costly relative to incomes and to other goods and services than it was in the past. Further, a greater share of the region's housing is now located outside of San Francisco, and City housing has become more costly relative to housing in many other parts of the region than it once was. While housing choices change over time, their effect on residence patterns primarily occurs when a household enters the market to purchase or rent housing. Thus, as workers select their place of residence, a greater share are likely to live outside of San Francisco and those who choose to reside in the City may have different characteristics from the average of all other employees who secured housing in San Francisco under a different market situation.

Housing Market Conditions in San Francisco and the Bay Area

Housing Market Context

Since the early 1970s, housing prices and rents have increased dramatically in San Francisco and throughout the Bay Area. Demand for housing has been strong and supply has not kept pace with demand in many areas. In addition, in the early 1980s major changes in financial markets substantially increased the cost of money for housing. Many different factors contribute to the current housing market situation. These include changing lifestyles, changing demographic and household characteristics, changing household incomes, employment growth, the attractiveness of the Bay Area as a place to live, the availability and cost of financing, the attractiveness of real estate as an investment, no-growth policies in some communities, and the increasing scarcity of land in other communities.

As a result of all of these factors, many households now allocate a greater share of their financial resources to housing, and the housing choices available at various prices and rents have changed. Many people cannot now afford the housing they prefer and many are not housed at the standard that, until recently, they had come to expect.

Changing Conditions in San Francisco's Housing Market

From 1970 to 1980, net additions to the City's housing stock included 6,200 units for an increase of two percent. About 1,900 units were added from 1980 through 1982. Most of the units added were for-sale housing. Overall, about one-third of the City's stock continues to be owner-occupied and about two-thirds renter-occupied. Among Bay Area counties, San Francisco has the largest percentage of renter-occupied units./11/

This net addition represents low growth of the housing stock relative to the strength of demand over this period. The low vacancy rate in San Francisco highlights the severity of the housing market pressures in San Francisco. Data from the Federal Home Loan Bank show a vacancy rate of 0.8% for San Francisco. San Francisco had the lowest housing vacancy among the nine counties of the Bay Area in 1981./12/

These market pressures are part of the explanation for the substantial increase in housing prices in the City. Market trend data based on appraisals indicate that housing value increases averaged 8.5% per year in the early 1970s and over 23% per year from 1975 to 1980. From 1980 to 1983, appreciation has slowed to around an annual average of 6%. San Francisco housing prices remain above those for housing in many other parts of the region. The market trend data indicate that the rates of increase in San Francisco have exceeded those in most other areas./13/

Rents in San Francisco have also increased. Census data indicate that median contract rent more than doubled from 1970 to 1980, for an average annual growth of 7.6%. Rents in San Francisco generally cover a wider range than rents in other parts of the region, including some of the lowest rent housing and some of the most expensive rental units in the region./14/

Despite rising housing prices and rents, the private market continues to be unable to produce enough new housing to relieve competitive pressures. Because of the high costs of land, financing, and construction, the private market cannot produce housing that is affordable to many households. Producing rental housing has been particularly difficult since residential rents, unlike for-sale housing prices, have not kept pace with rising construction and land costs or with inflation.

Incomes of City residents have not kept pace with increases in the cost of housing. During the 1970s, on average, income increased by about 135% over the period, while housing costs overall (combining median prices and rents) went up by about 165%./15/ Thus, the percentage of income allocated to housing increased.

The percentage of income spent on housing is higher for lower income households. The percentage declines as income increases. Across income categories, the percentage of income spent on housing is higher for renters than for owners. For example, Census data show that of the 31% of households with incomes under $10,000 in 1979, on average, the renters spent 48.6% of their income for housing and the owners spent 26.0% for housing. Of the 39% with 1979 incomes of $20,000 or higher, the renters spent 15.7% of their income on housing while the owners spent 11.2%./16/

In the current housing market, incentives to upgrade existing housing continue. Consumers priced out of higher priced neighborhoods are often attracted to other areas where housing can be secured initially at lower costs and investments made to upgrade the units. As this occurs, the desirability of the area improves, prices and rents rise, and the types and incomes of the households living in the neighborhood change. Moreover, the housing stock at lower prices and rents is reduced. This phenomenon (often called "gentrification") has occurred in areas of San Francisco. It has occurred primarily in neighborhoods with housing priced at below average levels but which is not the lowest priced housing in the City. In recent years, increasing preferences for central city neighorhoods and older housing and an increase in the types of households with these preferences have combined with overall competitive market conditions to support upgrading of this type.

Regional Perspective on Housing Market Conditions

Most of the housing market conditions described above for San Francisco are applicable throughout the Bay Area. Increases in home prices and in interest rates during the past decade have raised the cost of ownership housing. As a result, many first-time homebuyers and new entrants into the region's housing market now have difficulty affording Bay Area housing. In the rental housing market, a large number of households also face an affordability problem. The lack of new construction and continued strong demand support upward pressure on rents. Among renters, many lower income households are faced with increasing difficulty securing affordable housing.

Although these conditions exist to some extent in other parts of the country, the Bay Area remains one of the most desirable places to live and has one of the most competitive housing markets in the nation. Because of the limited supply of land in San Francisco, the role of the City as the employment center for the region, and the demographic characteristics of the City's population, the region's market conditions, in terms of supply, demand and price, are at their extreme in San Francisco.

Between 1970 and 1980, 436,200 housing units were added in the Bay Area. Most of the additions were in the East Bay and Peninsula, each with about 40% of

the total increase. The largest percentage increase in housing over the period occurred in the North Bay counties./17/

The shortage of supply relative to demand is evidenced in the vacancy rates for Bay Area counties. In 1983, the vacancy rate in Bay Area counties was below 2% except in Solano County, which had a vacancy rate of 2.1%. With the exception of Solano County (where the 1980 vacancy rate was 3%) this situation has persisted since 1980./18/

Market trend data on the value of single family residences in the Bay Area reflect the strong demand for housing in the region. Over the region as a whole, housing values increased almost four-fold between 1973 and 1983; the annual rate of increase in value was about 14% per year, compounded. The pattern is similar among East Bay, Peninsula, and North Bay housing sub-markets. In San Francisco, the data indicate somewhat stronger demand and more market pressure on existing units than the average for the region./20/

NOTES - Employment and Housing

/1/ San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984, Vol. 1, pp. IV.B.2 and IV.B.17.

/2/ Downtown Plan EIR, Vol. 1, pp. IV.B.28 and IV.B.31.

/3/ Elmer Johnson, Building Owners and Managers Association, telephone conversations, December 22, 1982, June 12, 1984, October 3, 1984 and January 5, 1985.

/4/ Coldwell Banker, "Office Vacancy Index of the United States," June 30, 1985. San Francisco vacancy rates are determined in a national survey of 34 major office districts conducted quarterly. A copy of the survey is on file and available for public review at the Department of City Planning, Office of Environmental Review, 450 McAllister St.

/5/ Blayney-Dyett, Urban and Regional Planners, July 1982, "Proposed Specific Plan: Bayshore Office Park and Baylands Development Area, Brisbane, California," and Metropolitan Transportation Commission, September 9, 1982, "Travel Impacts of Proposed Development on the Peninsula Along Route 101."

/6/ Bruce Breitman, The Breitman Co., telephone conversation, January 8, 1985.

/7/ William Cumbelich, Senior Sales Consultant, Office Building Specialist, Coldwell Banker, telephone conversation, February 24, 1984.

/8/ The data and information presented in this subsection are based on a survey and analyses of C-3 District employment and residence patterns prepared for the Downtown Plan EIR. This information, therefore, does not acccount for all workers in the greater downtown area; it does, however, describe the majority of the work force in that area. The residence patterns for C-3 District workers in 1984 are presented in the Downtown Plan EIR, Vol. 1, on pp. IV.D.36-39 and, in the context of future residence patterns, in Table IV.D.15 on p. IV.D.64. The survey results related to the residence patterns of C-3 District workers are presented in the setting section on Residence Patterns and Housing (Section IV.D) in the Downtown Plan EIR, which is available for review at the Department of City Planning.

/9/ The trends summarized here are discussed in more detail with relevant tables in the Downtown Plan EIR, Vol. 1, pp. IV.D.42-53, which are hereby incorporated by reference pursuant to State CEQA Guidelines, Section 15150.

/10/ Population and employment data from the U.S. Census, 1960, 1970 and 1980 for San Francisco and the region are the basis for the following discussion.

/11/ U.S. Department of Commerce, 1970 Census of Population and Housing, and 1980 Census of Housing, and San Francisco Department of City Planning, Residence Element of the Comprehensive Plan, June 1984.

/12/ Real Estate Research Council, Year-End 1983 Report - May, 1984, Volume 34/Numbers 2 and 4.

/13/ Real Estate Research Council, Market Trend Report - April, 1983, Volume 35/Number 1.

/14/ U.S. Department of Commerce, 1970 Census of Population and Housing, and 1980 Census of Housing.

/15/ Ibid.

/16/ Ibid.

/17/ Ibid.

/18/ Real Estate Research Council, Year-End 1983 Report - May, 1984, Volume 35/Numbers 2 and 4.

/19/ Real Estate Research Council, Market Trend Report - April, 1983, Volume 35/Number 1.

IV. ENVIRONMENTAL IMPACT

An application for environmental evaluation for the project was filed on February 24, 1984. An Initial Study of the proposed project was published on June 22, 1984, and it was determined that an Environmental Impact Report (EIR) would be required for the project. Issues determined to require no further discussion as a result of the Initial Study include noise during project operation; air quality during construction; public services and utilities; biology; land (topography, soils, geology and hydrology); hazards, and sub-surface cultural resources. Therefore, this EIR does not discuss these issues. (See Appendix A, p. A-2, for the Initial Study.)

Not all of the impacts presented in this section are physical environmental effects as defined by the California Environmental Quality Act (CEQA). They are included here for informational purposes only.

A. LAND USE AND ZONING

LAND USE

The proposed project would represent an expansion of the current trend of new office construction in the blocks south of Market St. The project would be the first new highrise constructed on Howard St. west of Main St. Four mid- to high-rise buildings are located in the former C-3-S Use District (now part of the C-3-O (SD) under the Downtown Plan implementing ordinances, adopted by the Board of Supervisors and signed by the Mayor in September 1985 and effective October 17, 1985) in the vicinity of Howard and Spear Sts., and a fifth is under construction. All are built within the basic 7:1 FAR allowed in the former C-3-S district.

The project would require demolition of a one-story structure. The project would increase the density of development on the site, adding about 220,815 gross sq. ft. of new office space and 1,895 gross sq. ft. of retail

space. The variety of uses on the site would increase; the project would replace a parking garage and lot with a mixed-use (office and retail) structure. The number of workers employed at the site would be increased by the project. In addition, pedestrian activity at the site would increase due to persons (tenants and non-tenants) patronizing the ground-floor retail establishments.

The presence of the project and other development in the area would intensify pressures for redevelopment. Development of high-density office uses in this area would be consistent with provisions of the Downtown Plan which identify this area as one appropriate for expansion of the downtown office district.

ZONING

The approximately 333-ft. project tower would comply with the 450-ft. height limit. The building length would be about 160 ft., equal to the maximum allowable length permitted above 150 ft. in height (the site dimensions do not allow the possibility of exceeding the bulk limitations). The diagonal dimension of about 200 ft. would be equal to the permitted maximum dimension. The sponsor would seek exceptions to upper tower setback requirements as provided in Section 132.2(c), subject to approval under Section 309. Section 132.2(c) provides that exceptions may be allowed on lots with a frontage of less than 75 ft. under certain conditions.

The FAR gross floor area of the project would be approximately 220,815 sq. ft. The project would exceed the basic FAR permitted in the C-3-O (SD) District of 6:1, equal for the site to 73,602 sq. ft. The project incorporates transferred development rights (TDR) of 147,213 sq. ft. (see Section III.A, p. 26), available from preservation of designated buildings, although no such buildings have yet been identified for purchase of TDRs by the project. Sites contributing development area would be used in the calculation of the project's floor area ratio. The floor area ratio of the project, would be less than or equal to 6:1 from this site and up to 9:1 from any transferor sites in the C-3-O District (calculated over just the footprint and lot of the project building itself, the FAR would be about 18:1). The use of TDRs is limited to a maximum FAR of 18:1 calculated over the development site.

The project site is located within the C-3-O (SD) Downtown Office Special Development District. Office uses occur in the C-3-O (SD) District, but are not a primary use in the district at the current time. Traditionally, the South of Market area has been characterized by businesses such as retail, printing and other downtown-serving activities, and light-industrial manufacturing, with some residential enclaves. Land uses are changing in this area.

The Downtown Plan's designation of this area as an office district and as a receiver area for TDR will contribute to changing the land use character of Howard St. from an area of business support, light industrial and professional offices (in older buildings) to an area for new high-rise office construction. Many of the existing warehouse, printing and service businesses could eventually be forced to relocate to other parts of the City or Bay Area.

Recognizing that South of Market is no longer the industrial area it once was, the Department of City Planning has prepared a South of Market technical study and planning analysis, and formulated recommendations, South of Market, Proposal for Citizen Review, published June 1985, designed to protect the area south of the C-3 Districts for light-industrial, residential, artisan, business, and neighborhood-serving retail activities. The study area in the proposed South of Market Plan is the approximately 460 acres bounded roughly by Rincon Hill and South Beach planning areas on the east, U.S. 101 on the west, the Yerba Buena Center Redevelopment Area and Minna St. on the north and Townsend St. on the south. The permanent zoning controls proposed by the Department for this area would create six subareas, each with its own controls, to encourage the retention of existing primary uses and to facilitate expansion of similar uses. Uses paying higher rents such as high-rise offices, wholesale trade, bars, and restaurants with liquor licenses would be limited strictly to certain street frontages. The subareas would be designated as light industrial/commercial, residential, residential hotel, nighttime entertainment, (architectural) preservation, and office.

To protect existing South of Market small businesses -- both retail and manufacturing -- and encourage others to establish there, the proposal recommends that new zoning controls reflect existing low-rise structures. This includes, for example, height limits in the industrial/commercial subarea

of 40 to 50 ft. Commercial/industrial Floor Area Ratios would be reduced, with new limits ranging from 4:1 to 1:1 with most of the area controlled by a 2.5:1 FAR. Neighborhood-serving retail uses such as barbers, shoe repair, hair designers, and cleaners would be permitted uses throughout South of Market. Live/work space, a newly created category to be zoned commercial and therefore not subject to rent control, would be a principal use throughout all subareas as well. Residential densities would be established as "moderately high" (maximum of one unit per 400 sq. ft. of lot area), and "high" (density limited by open space, height, setback, urban design controls and Housing and Building Code standards) in the Residential Hotel subarea.

The City Planning Department anticipates that new, permanent zoning controls for South of Market will go into effect in 1986.

The project would respond to Objective 6 of the Commerce and Industry Element of the Master Plan to support San Francisco as a "prime location for financial, administrative, corporate and professional activity." Policy 1 of this objective states, "Encourage continued growth of prime downtown office activities so long as undesirable consequences of such growth can be avoided." The project would respond to this policy through its incorporation of design, transportation and housing mitigation measures. The project would respond to Policy 2 of Objective 6 of the above Element, "to maintain a compact downtown core so as to minimize displacement of other viable uses." The project would be located in the area described by the Plan as appropriate for expansion of the downtown core. Policy 3 states that "downtown development " must be "compatible with the design and character of San Francisco." The project would respond to design guidelines calling for stepped form, pedestrian interest and interesting roofs; it would require exceptions to setback requirements.

The project would respond to Policy 4, "provide adequate amenities for those who live, work and use downtown," through the retail and pedestrian arcade uses proposed at the building's ground and mezzanine levels.

B. URBAN DESIGN

By replacing an older one-story concrete building with a new glass, steel and granite and concrete high-rise tower, the proposed project would alter the visual coherence, scale, facade rhythm, and urban texture of the project block and its vicinity (see Figure 12, p. 59).

The project would represent a departure in scale and form from existing development on the site block; it would be similar to newer high-rise structures (such as Five Fremont Center) and to other buildings proposed on the block (100 First St. and 535 Mission St.). Figures 13 and 14, pp. 60-61 show the project as it would appear from two vantages.

Long-range views of the project are shown in Figures 15 and 16, pp. 62-63. Generally, the project would be visible from the south and southwest above lower buildings in the foreground. It would not stand out in views from Potrero Hill and Twin Peaks because of its location on the periphery of existing high-rise development.

The Urban Design Element of the San Francisco Master Plan contains policies and principles which may be used to evaluate the project. Table 2, p. 64, the Relationship Between Applicable Urban Design Policies of the Master Plan and the Proposed Project, compares the project to these policies.

C. SHADOW AND WIND

SHADOW

Under the Downtown Plan, shadows from new new developments on publicly accessible open spaces must be minimized. Open spaces in the project vicinity include the Transbay Terminal unloading area, at the southeast corner of First and Mission Sts., and the Golden Gate University entry and seating area on the north side of Mission St. near First St. The sponsors of two developments on Mission St. (100 First St., approved at First and Mission Sts. and 535 Mission St., proposed at Shaw Alley and Mission St.) plan to create a publicly accessible open space on the roof of the two-story garage located

FIGURE 12
524 HOWARD
GROUND-LEVEL VIEW

SOURCE: HELLER & LEAKE

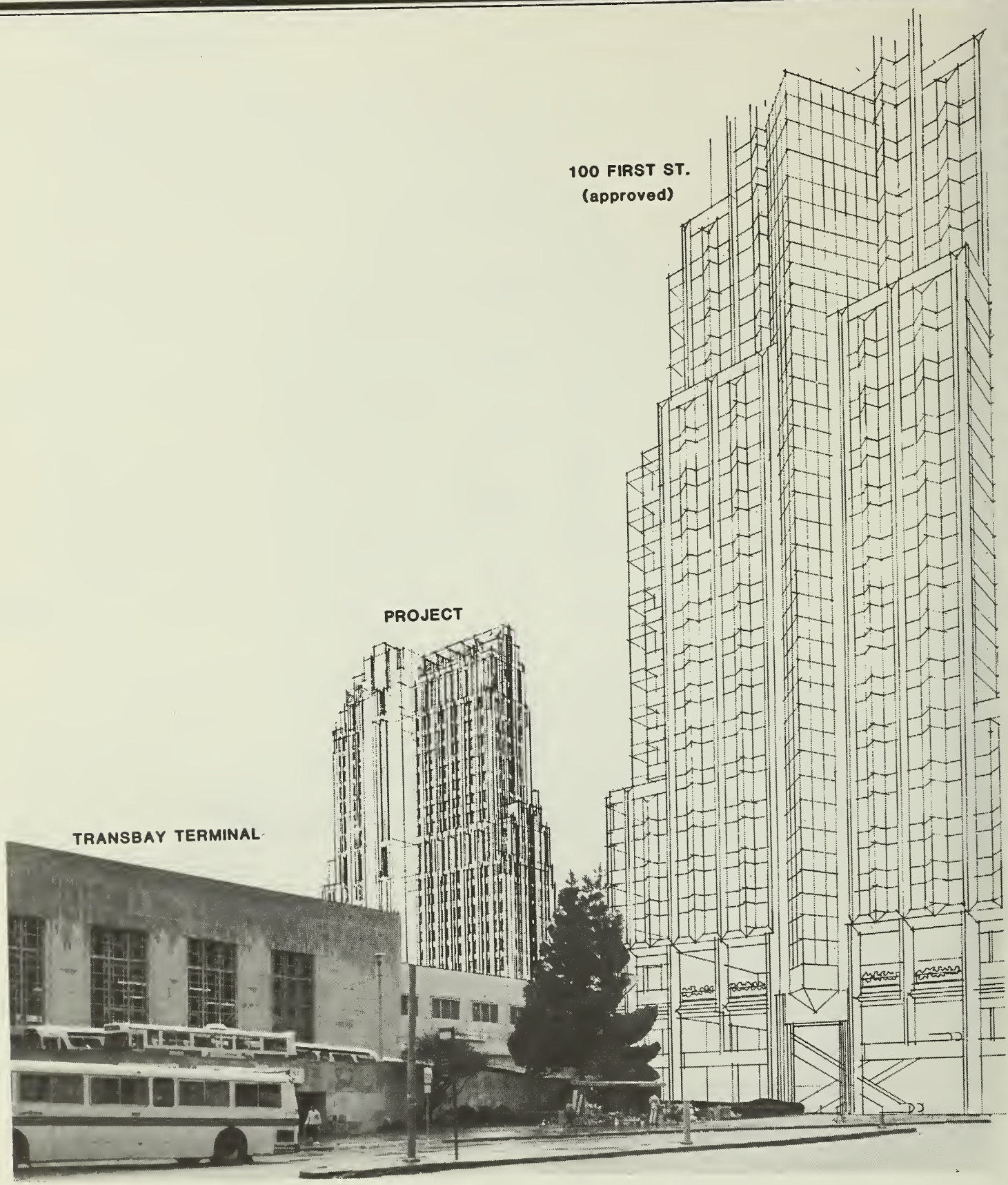
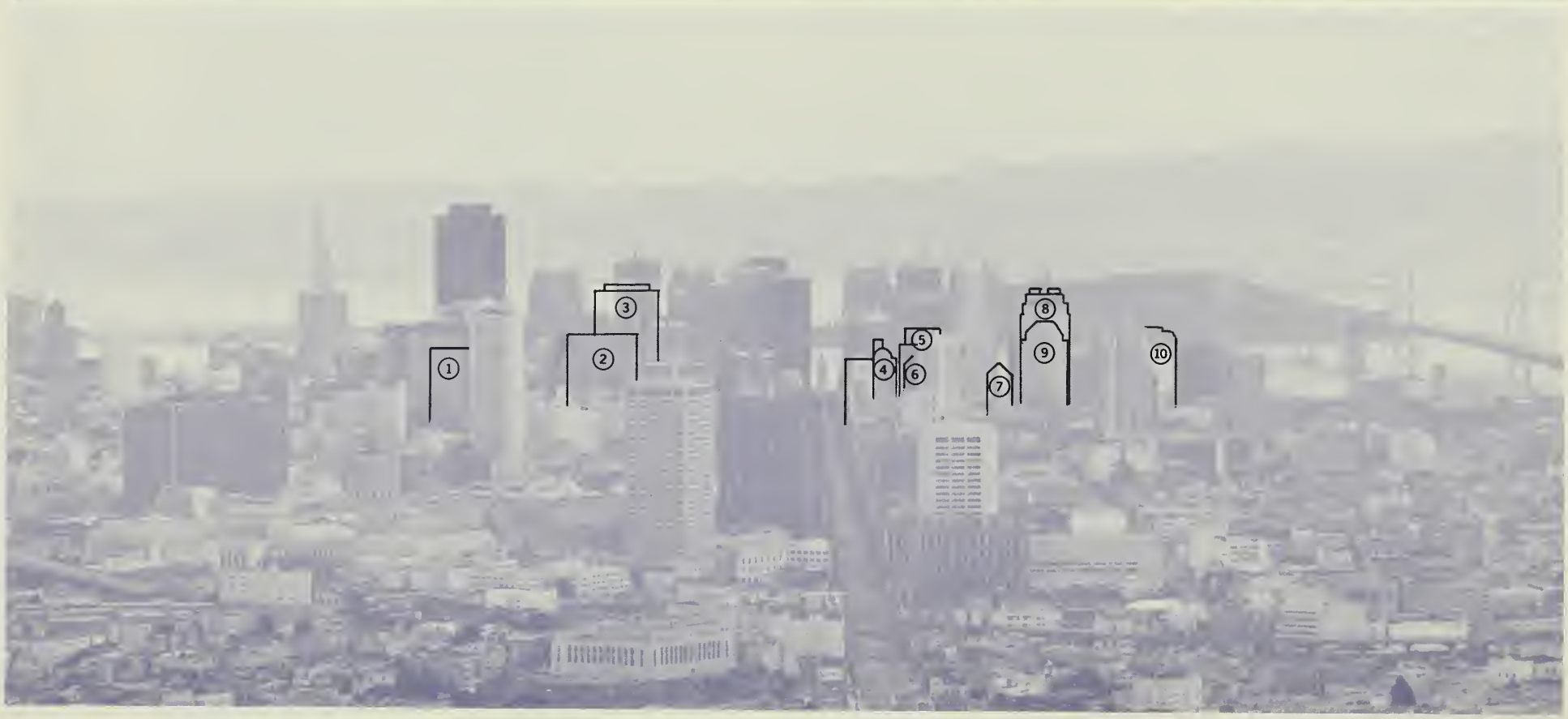


FIGURE 13
524 HOWARD
RENDERING OF PROJECT
FROM MISSION STREET

SOURCE: HELLER & LEAKE

FIGURE 14
524 HOWARD
RENDERING OF PROJECT FROM HOWARD STREET

SOURCE: HELLER & LEAKE



MAJOR STRUCTURES PROPOSED OR UNDER CONSTRUCTION

1. HILTON TOWER NO. 2
2. MASON/O'FARRELL HOTEL
3. 333 BUSH
4. NEW MONTGOMERY PLACE
5. STEVENSON PLACE
6. PALACE HOTEL ADDITION
7. 90 NEW MONTGOMERY
8. 535 MISSION
9. 100 FIRST
10. **PROJECT**

FIGURE 15
524 HOWARD
VIEW OF PROJECT FROM TWIN PEAKS

SOURCE: ESA

FIGURE 16
524 HOWARD
RENDERING OF PROJECT FROM POTRERO HILL

SOURCE: HELLER & LEAKE

TABLE 2: RELATIONSHIP BETWEEN APPLICABLE URBAN DESIGN POLICIES OF THE MASTER PLAN AND THE PROPOSED PROJECT

URBAN DESIGN PLAN	RELATIONSHIP OF PROJECT TO POLICIES
1. Objective 1, Policy 3 - "Recognize that buildings, when seen together, produce a total effect that characterizes the City and its districts."	The development of a highrise tower on Howard St. in the flat South of Market area would not reinforce either the natural land shapes or the existing low-rise buildings. The proposed project would be built south of existing high-rise buildings and would be the tallest building along Howard St. The project would therefore stand apart from the highrises in the Financial District and would draw and focus attention on an area of low-rise buildings.
2. Objective 2, Policy 6 - "Respect the character of older development nearby in the design of new buildings."	The project would differ in form and scale from older development in the vicinity. The facade would consist of a six-story base section and the 17-story top section. The project block has a mixture of architectural styles which exhibit differing forms, and facade materials and colors, ornamentation, textures and proportions.
3. Objective 3, Policy 1 - "Promote harmony in the visual relationships and transitions between new and older buildings."	See Item 2 above. The scale of the building base would relate to older structures in the vicinity.
4. Objective 3, Policy 2 - "Avoid extreme contrasts in color, shape and other characteristics which will cause new buildings to stand out in excess of their public importance."	See Item 2, above. The building's exterior materials would consist of light-colored granite cladding at the ground floor and precast concrete above, and grey- or green-tinted window glass. The stepped, glazed upper tower and penthouse would be floodlighted at night, but would not impose reflective or glaring light on other properties or nearby roadways. The shape of the project would distinguish the building from boxlike highrises in the Financial District.

TABLE 2: RELATIONSHIP BETWEEN APPLICABLE URBAN DESIGN POLICIES OF THE MASTER PLAN AND THE PROPOSED PROJECT (Continued)

POLICIES	RELATIONSHIP
5. Objective 3, Policy 4 - "Promote building forms that will respect and improve the integrity of open spaces and other public areas."	The project would increase shadows on the unloading area in front of the Transbay Terminal. The project would include a two-story street-level arcade that would connect Natoma and Howard Sts. This public arcade would provide a link in a possible future mid-block pedestrian walkway extending southward from Market St.
6. Objective 3, Policy 5 - "Relate the height of buildings to important attributes of the city pattern and to the height and character of existing development."	The proposed building would be located on Howard St. in an area of low-rise structures. The project design would not reflect the character of the district and would not be similar in height to surrounding buildings. Its design is intended to reflect the Pacific Telephone building on New Montgomery St. The project would be visible in the City skyline from vantage points south of the Financial District, such as Potrero Hill, and from Twin Peaks (see Figures 15 and 16). The height of the project would relate to the objectives for city pattern contained in the Downtown Plan.
7. Objective 3, Policy 6 - "Relate the bulk of buildings to the prevailing scale of development to avoid an overwhelming or dominating appearance in new construction."	The project's street front width of about 74 ft. would be less than that of most highrise buildings in the City. Its depth of 150 ft. is the same as that of most buildings on the project block. The tapered, stepped-back top would diminish the bulk of the project at its upper levels and would reduce the appearance of bulk.

TABLE 2: RELATIONSHIP BETWEEN APPLICABLE URBAN DESIGN POLICIES OF THE MASTER PLAN AND THE PROPOSED PROJECT (Continued)

POLICIES	RELATIONSHIP
8. Objective 4, Policy 13 - "Improve pedestrian areas by providing human scale and interest."	The project would feature a pedestrian arcade connecting Howard and Natoma Sts., and would contain retail uses at street and mezzanine levels. The retail uses would contribute to increasing pedestrian activity in an area now largely devoid of shops. The building's six-story base element is intended to provide street-level scale.
DOWNTOWN PLAN POLICIES	
"Foster sculpturing of building form, less overpowering buildings and more interesting building tops."	The project features a slender, stepped profile and a rooftop articulated by both form and material changes.
"Maintain separation between buildings to preserve light and air and prevent excessive bulk."	The project's setbacks and stepping would not meet the requirements of the Plan. The stepping proposed would allow some separation between towers if adjacent parcels were built up, but not as much as required under the Plan. Tower separation would be required for development on adjacent parcels.
"Assure that new buildings contribute to the visual unity of the City."	The building would be clad in light-toned material and would not use reflective glass.
"Encourage more variation in building facades and greater harmony with older buildings through use of architectural embellishments and bay or recessed windows."	The building's entrance would be recessed, and side setbacks and skin patterns would define the building base. The project would feature a widened center window bay and vertical projections at column locations carried past parapet lines. The vertical projections and detailing would be designed to reflect the Pacific Telephone building. The building would have a varied facade but would not reflect design elements of nearby buildings (large industrial sash windows and cornices).

TABLE 2: RELATIONSHIP BETWEEN APPLICABLE URBAN DESIGN POLICIES OF THE MASTER PLAN AND THE PROPOSED PROJECT (Continued)

POLICIES	RELATIONSHIP
"Conserve the traditional street to building relationship that characterizes downtown San Francisco."	The project's base would be built to lot lines except for a recessed entrance.
"Provide setbacks above a building base to maintain the continuity of the predominant streetwalls along the street."	The building would be set back above the building base on the west and would be set back on the east except for the elevator core. The building would not be set back above the base on Howard St. or Natoma St. It would instead rely on setbacks on the east and west and changes in facade pattern to define the building's base.
"Maintain and enhance the traditional downtown street pattern of projecting belt courses on taller buildings."	The project would not incorporate a projecting belt course or other architectural projections.
"Use design and materials and include activities at the ground floor to create pedestrian interest."	The ground-level facade would be clad in granite; the entrance would be defined by a four-story recess. A pedestrian arcade lined with retail uses would lead through the building from Howard to Natoma St.

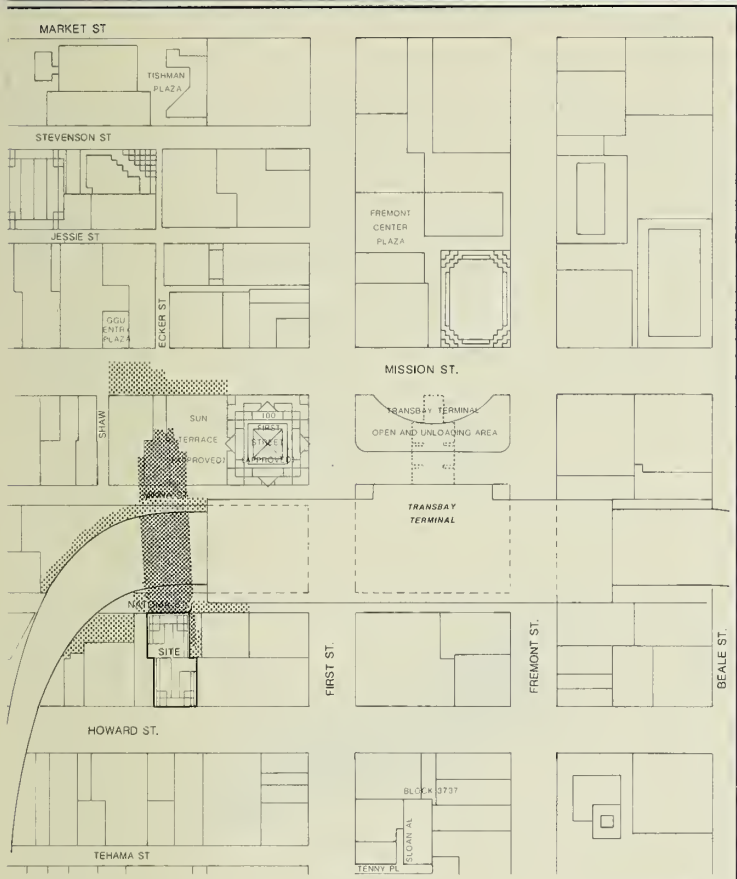
SOURCE: Urban Design Element, San Francisco Master Plan, 1971; Downtown Plan, a part of the San Francisco Master Plan, 1985

between the towers. CalTrans is considering redesigning the Transbay Terminal unloading area in order to allow additional bus use and restrict pedestrians to the Mission St. sidewalk and an elevated bridge across Mission St.

Section 263.8 of the City Planning Code adopted as part of the Downtown Plan provides for the possibility of private development of privately owned and maintained open space on Block 3737, southeast of the project block (on the south side of Howard St. between First and Fremont Sts.). The open space could take the form of an urban park or, as the Plan states, "another type of open space allowed by Section 138 if the standards for an urban park cannot be met because of shadows cast by buildings on other blocks."

In order to establish the range of shadow effects of the project, shadows in the project vicinity were analyzed for all four seasons of the year at various times. The diagrams include shadows from existing buildings and the approved 100 First St. project. Shadows of proposed developments, other than the project, are not included.

March (see Figures 17a and 17b, pp. 69-70): Early mornings before 10 a.m., project shadows would extend to Mission St. At 10 a.m., the project shadow (a band approximately 70 ft. wide) would extend across Natoma St., the Transbay Terminal ramp, and rooftops of buildings facing Mission St., including about 1,800 sq. ft. of the southern half of the roof of the two-story garage which is to be developed as publicly accessible open space as part of the 100 First St. and 535 Mission St. projects. The project would not shade the Golden Gate University entry plaza. The project's shadow would move off the open space after 11 a.m., shading about 200 sq. ft. of the open space at 11 a.m. By noon the shadow would terminate on the Transbay Terminal ramp. At 3 p.m. the project would shade the roofs of buildings and partially shade a parking lot east of the site, and would add some new shadow to First St. About half of Howard St. between First and Fremont Sts. would experience new shadow as a result of the project. The project shadow would extend to the middle of Howard St. between First and Fremont Sts. At 4 p.m. the project would shade about half of Block 3737, which the Downtown Plan proposes for private development of open space.



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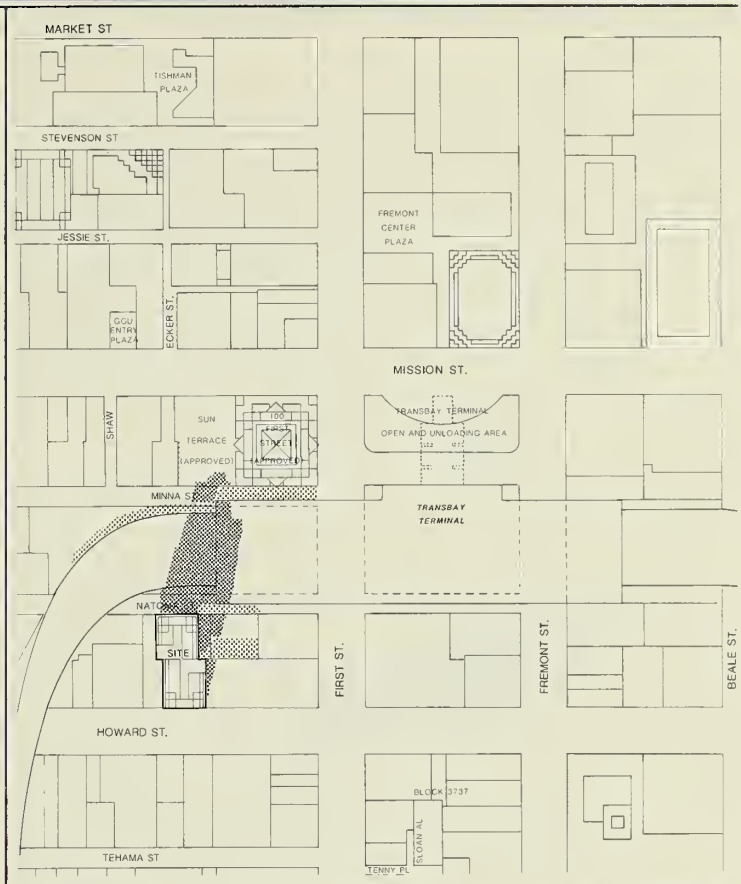

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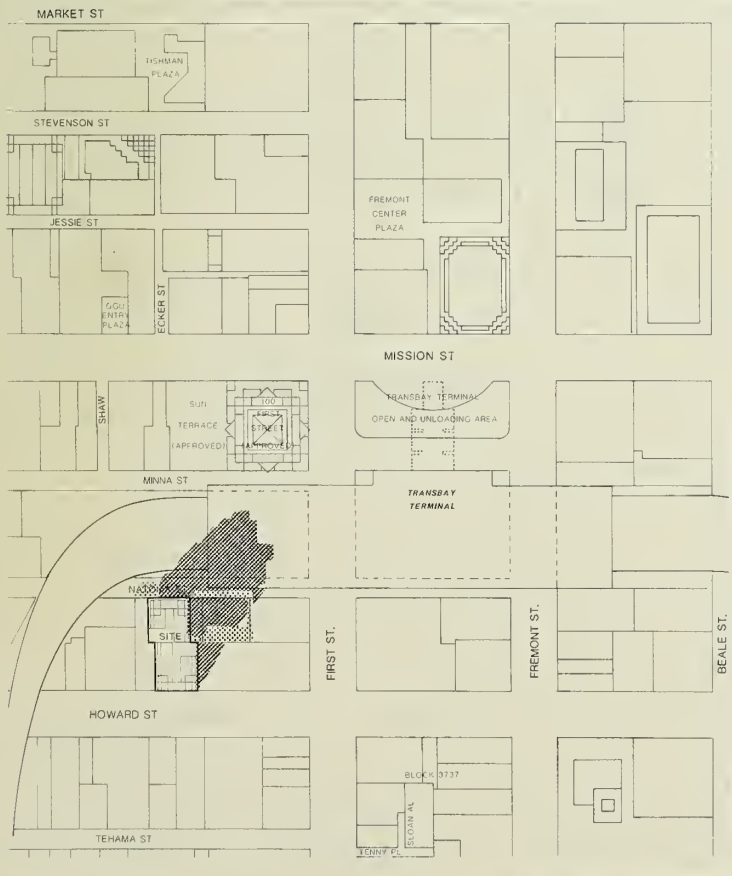


12 NOON PST

LEGEND

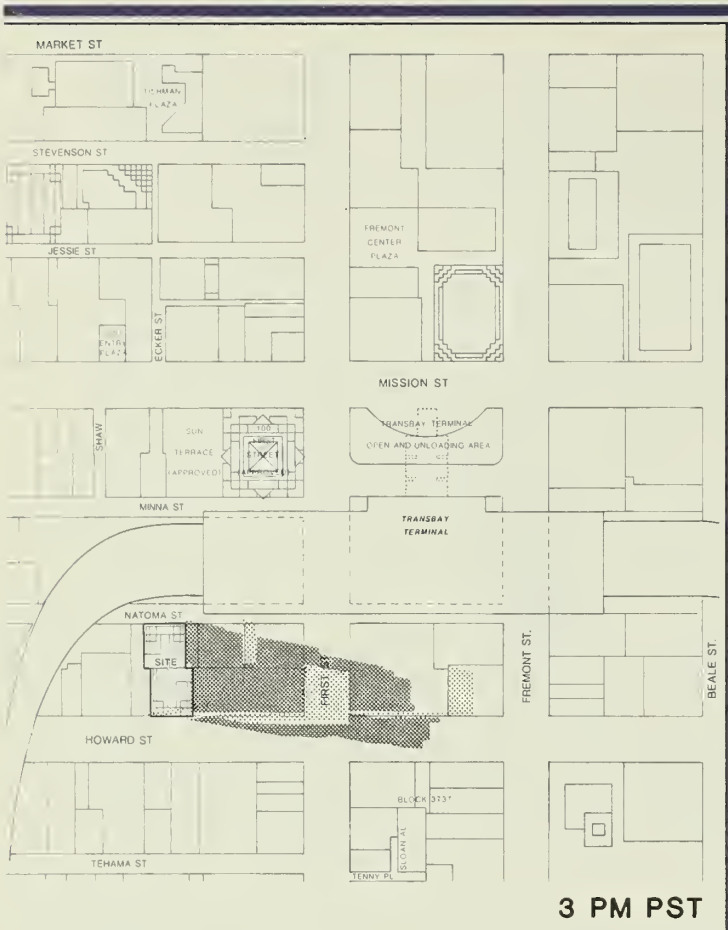
SHADOW FROM EXISTING AND APPROVED BUILDINGS

NET NEW SHADOW FROM PROJECT

0 FEET 500

FIGURE 17a
524 HOWARD
SHADOW PATTERNS-
MARCH MORNING

SOURCE: ESA



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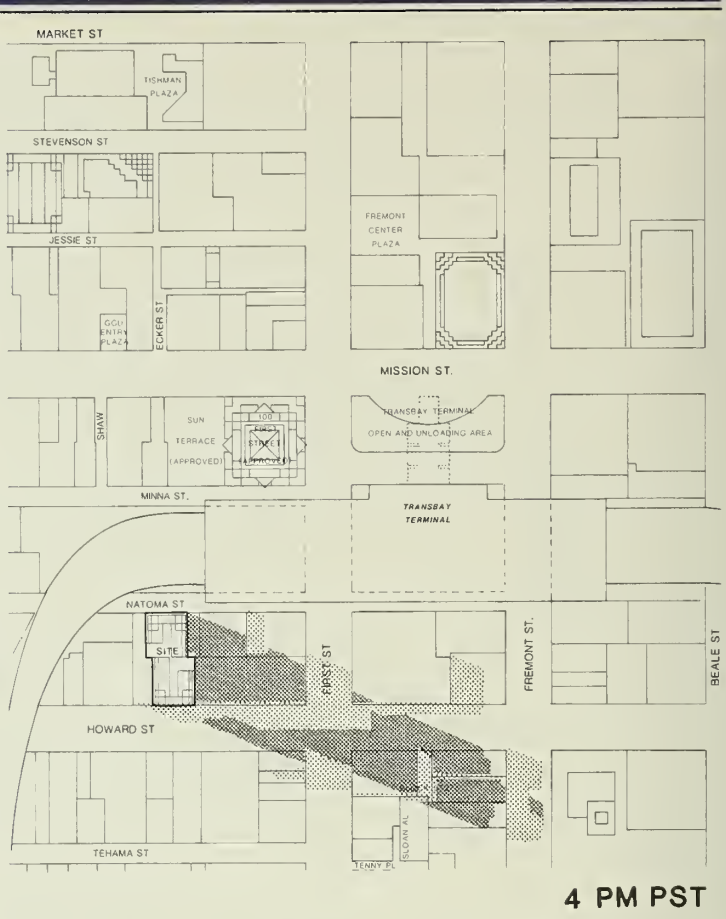


4 PM PST

LEGEND

SHADOW FROM EXISTING AND APPROVED BUILDINGS

NET NEW SHADOW FROM PROJECT

0 FEET 500

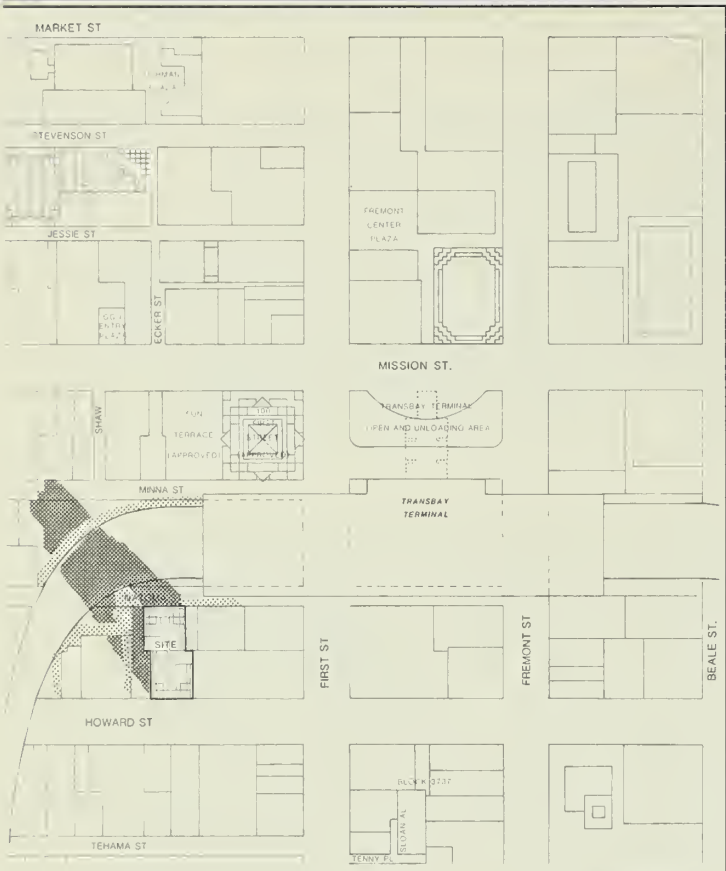
FIGURE 17b
524 HOWARD
SHADOW PATTERNS–
MARCH AFTERNOON

SOURCE: ESA

June (see Figure 18, p. 72): At 10 a.m. (Pacific Daylight Time, PDT), the project would shade roofs of two buildings to the west of the site, the Transbay Terminal ramp, parking lots fronting on Minna St., and would terminate on Minna St. By noon, the shadow would have shifted toward the east and shortened considerably to terminate halfway across the Transbay Terminal ramp. During the afternoon, the project would shade roofs of buildings on the project block east of the site; by 3 p.m. the project shadow would extend halfway into Howard St.

September (see Figures 19a and 19b, pp. 73-74): As in March, early morning shadows to about 10 a.m. (PDT) would extend into Mission St. Most of Mission St. in this area is already shaded by existing buildings. The project would not shade the entry courtyard of Golden Gate University but would add new shadow to the Transbay Terminal ramp and Minna St. During mid-mornings (11 a.m.), the project shadow would terminate on the garage-rooftop open space between the approved 100 First St. and proposed 535 Mission St. developments, shading about 2,500 sq. ft. of this open space. By noon, the shadow would terminate at the southeast corner of this planned open space, shading about 90 sq. ft. At 3 p.m., the project shadow would extend eastward across First St. to terminate on the easterly First St. sidewalk, shading rooftops and parking lots, and adding new shadow to First St. By 4 p.m., the shadow would terminate on Howard St. midway between First and Fremont Sts.

December (see Figure 20a and 20b, pp. 75-76): At 9 a.m. on December mornings, the project shadow would extend to Market St. and shade about half of the garage rooftop open space. At 10 a.m., the project shadow would extend northeast across Mission St., adding new shadow mainly to rooftops and the Transbay Terminal bus ramp and shading about half of the planned rooftop open space. All streets in the path of the shadow are currently shaded by existing buildings. By noon the project shadow would extend into Mission St., and would shade about one-third of the Transbay Terminal loading area and cast new shadow on First and Natoma Sts and the roof of the Transbay Terminal. Shadows from the project, 100 First St. and the Transbay Terminal structure, itself, would cover about 60% of this area. At 1 p.m., the project would shade the easterly corner of the Transbay Terminal passenger loading area. At 3 p.m., the project shadow would extend east to terminate on rooftops across Beale St., adding new shadow mainly to rooftops; about half of First St., and



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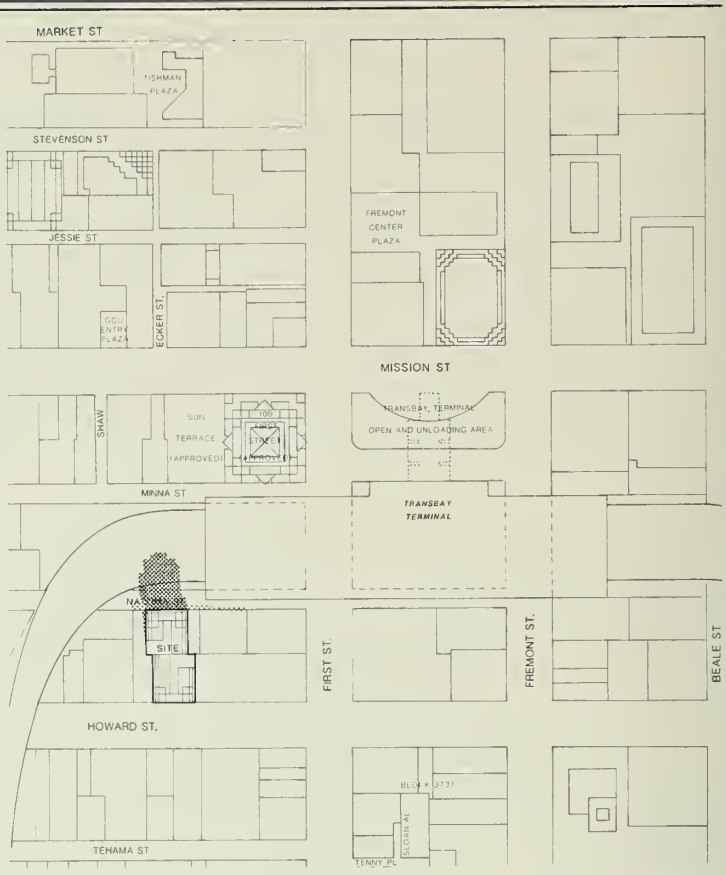
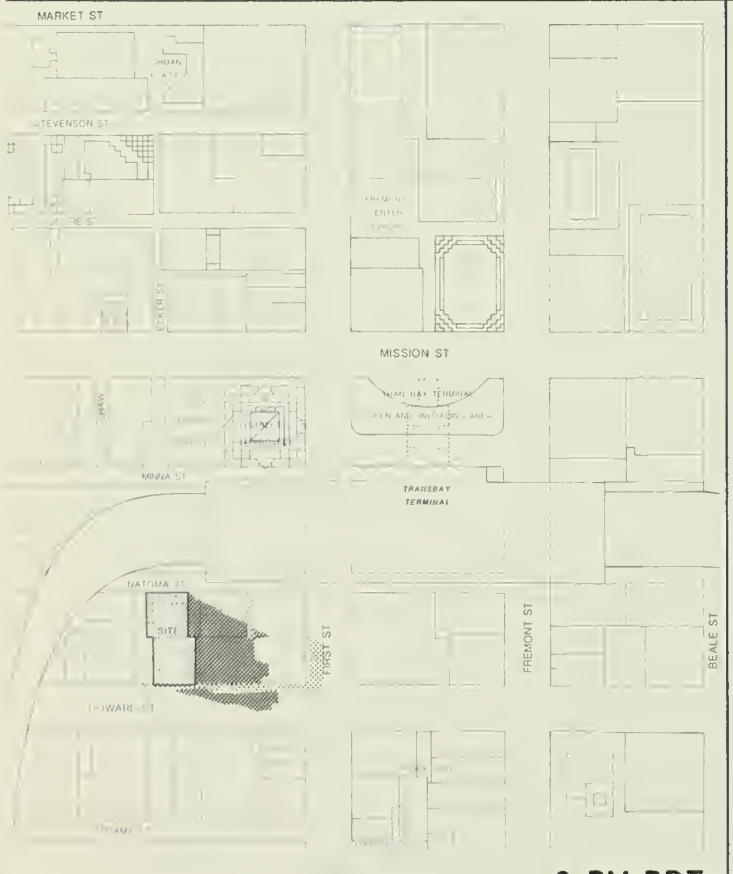


12 NOON PDT



3 PM PDT

LEGEND

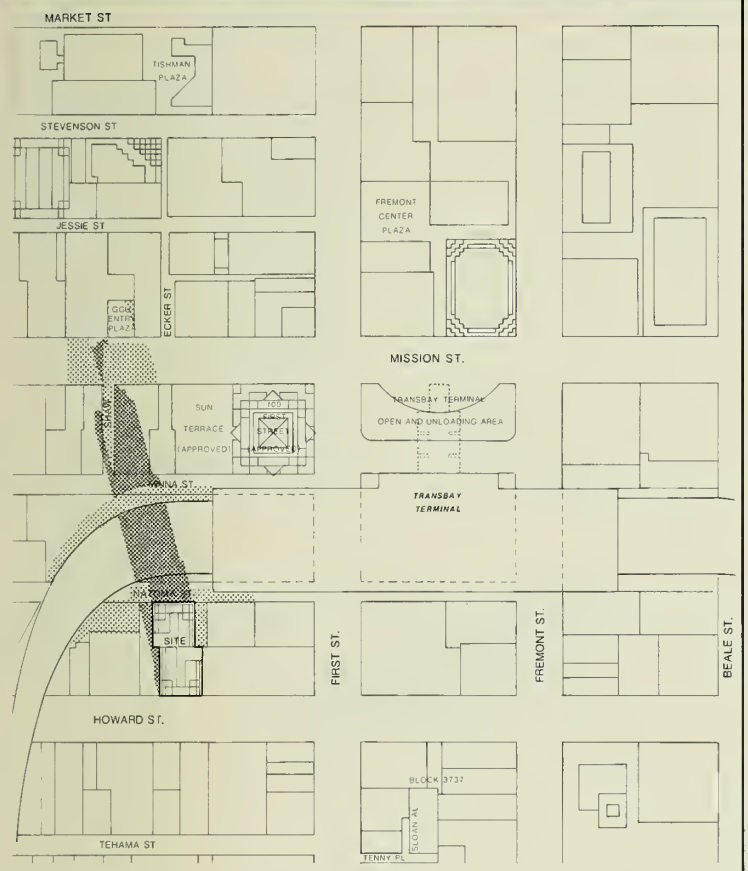
SHADOW FROM EXISTING AND APPROVED BUILDINGS

NET NEW SHADOW FROM PROJECT

0 FEET 500

FIGURE 18
524 HOWARD
SHADOW PATTERNS–
JUNE

SOURCE: ESA



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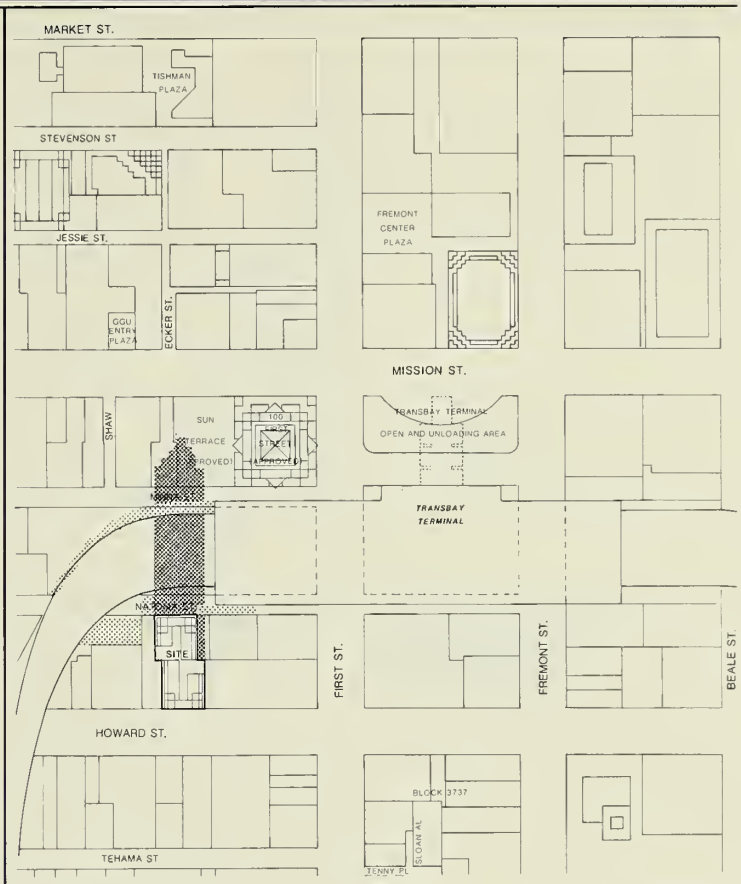
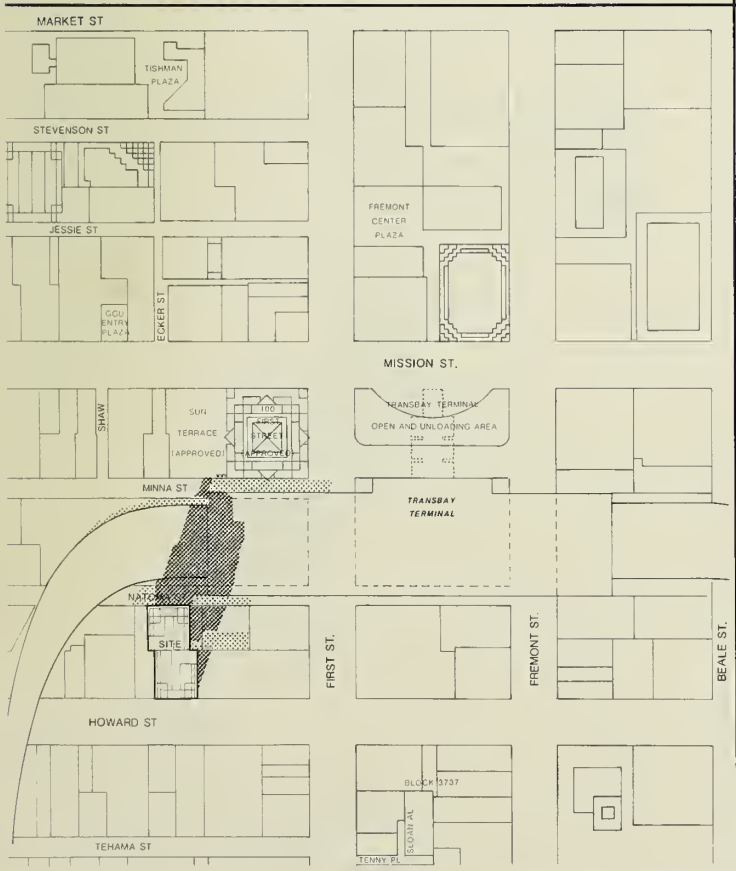


11 AM PDT



12 NOON PDT

LEGEND

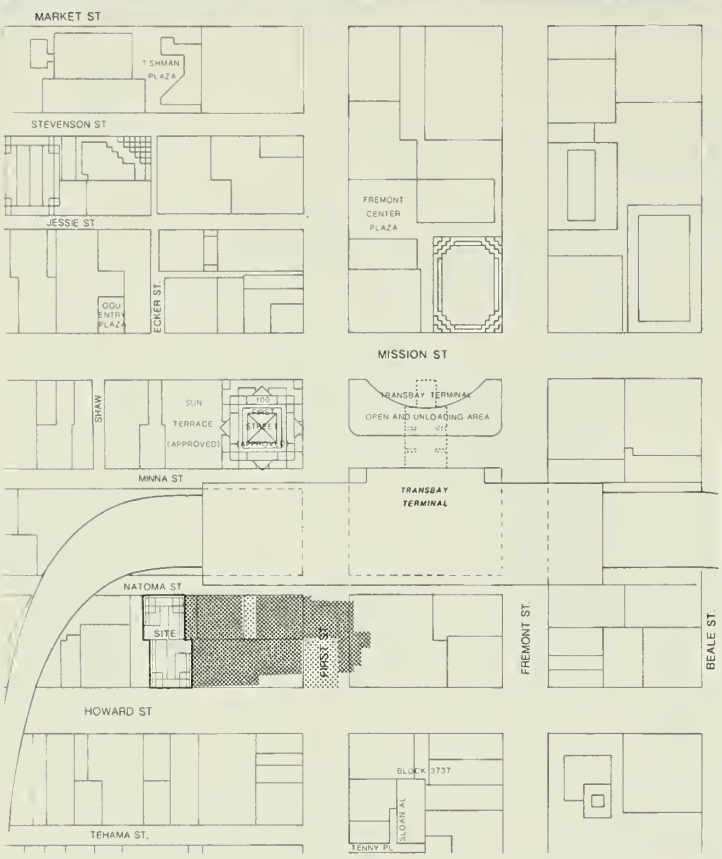
SHADOW FROM EXISTING AND APPROVED BUILDINGS

NET NEW SHADOW FROM PROJECT

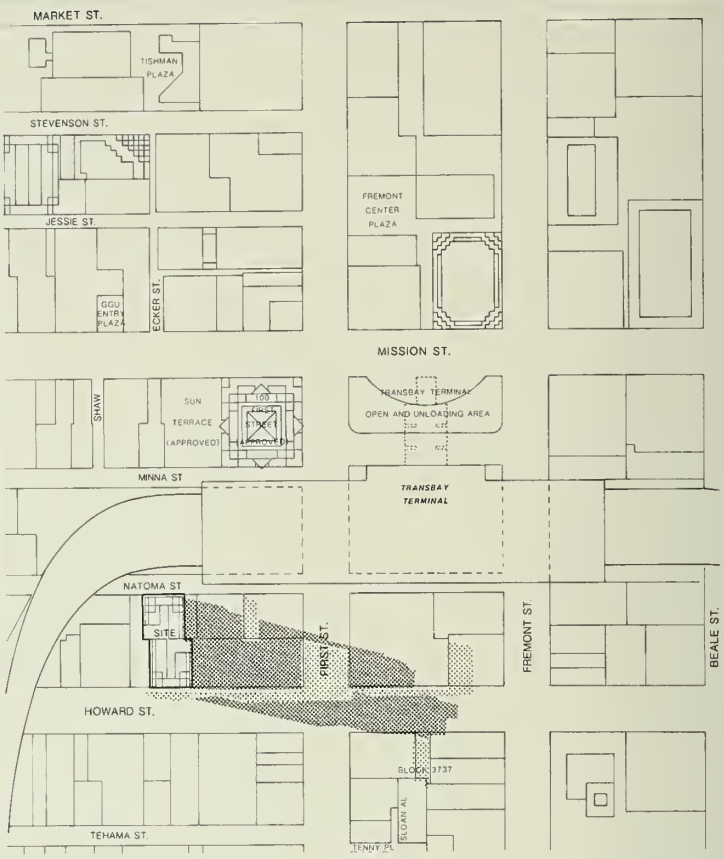
0 FEET 500

FIGURE 19a
524 HOWARD
SHADOW PATTERNS-
SEPTEMBER MORNING

SOURCE: ESA



3 PM PDT



4 PM PDT

LEGEND

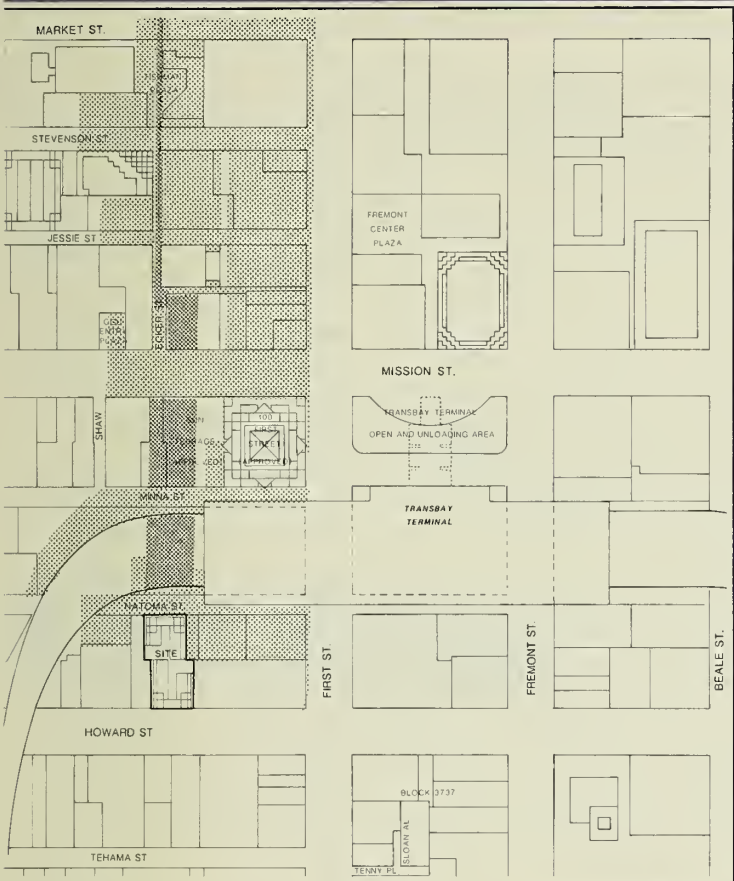
SHADOW FROM EXISTING AND APPROVED BUILDINGS

NET NEW SHADOW FROM PROJECT

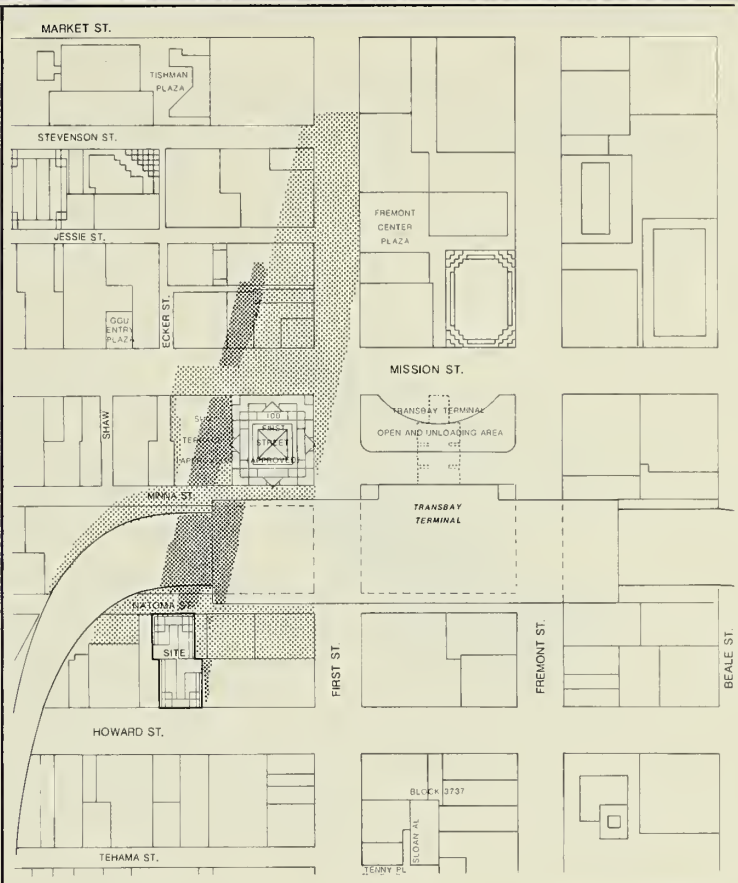
0 FEET 500

FIGURE 19b
524 HOWARD
SHADOW PATTERNS–
SEPTEMBER AFTERNOON

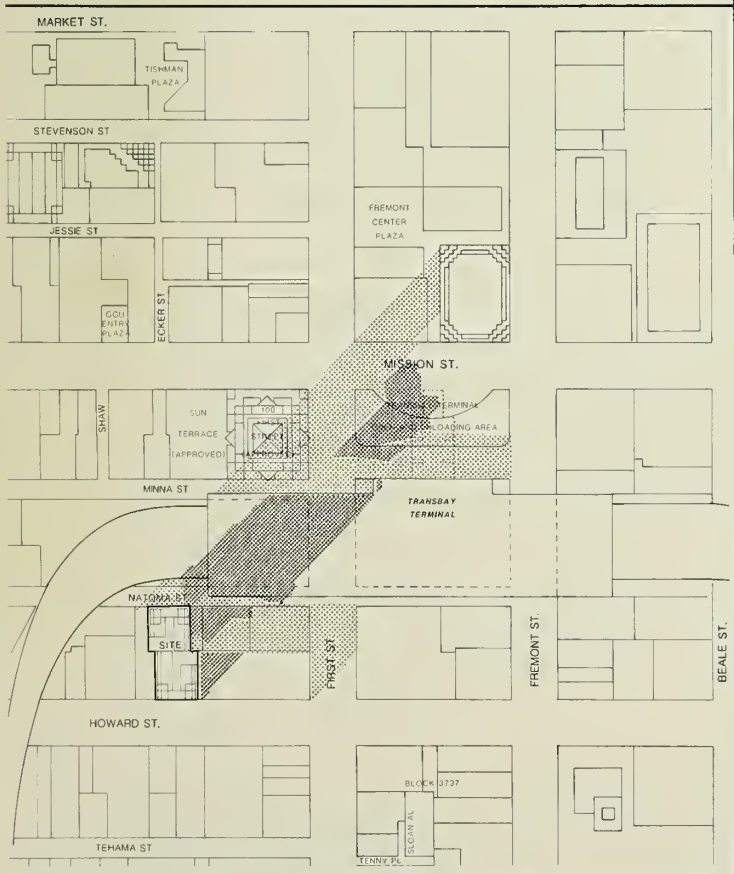
SOURCE: ESA



9 AM PST



10 AM PST



12 NOON PST

LEGEND

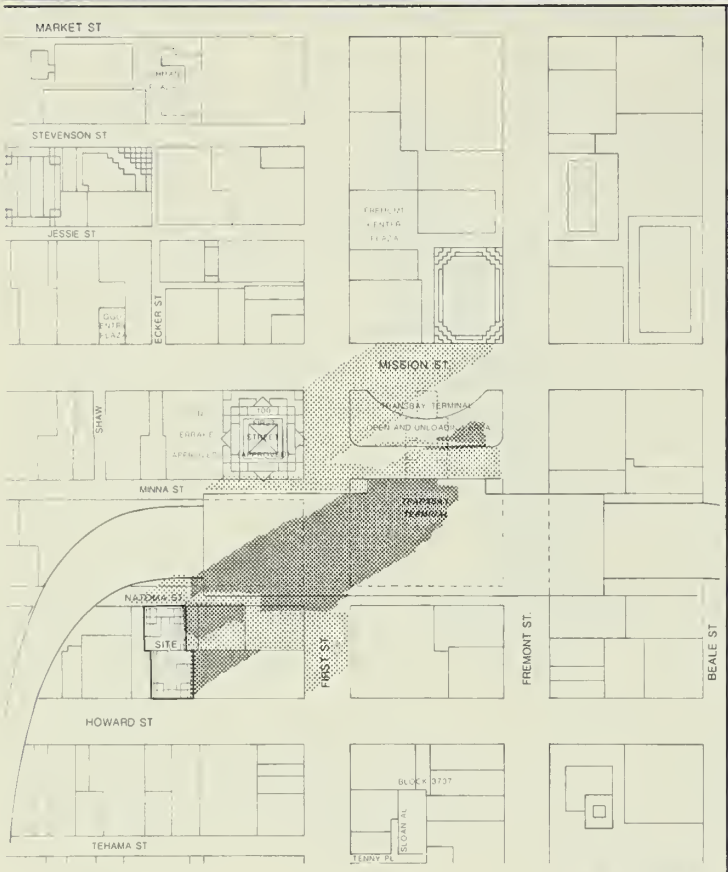
SHADOW FROM EXISTING AND APPROVED BUILDINGS

NET NEW SHADOW FROM PROJECT

0 FEET 500

FIGURE 20a
524 HOWARD
SHADOW PATTERNS-
DECEMBER MORNING

SOURCE: ESA



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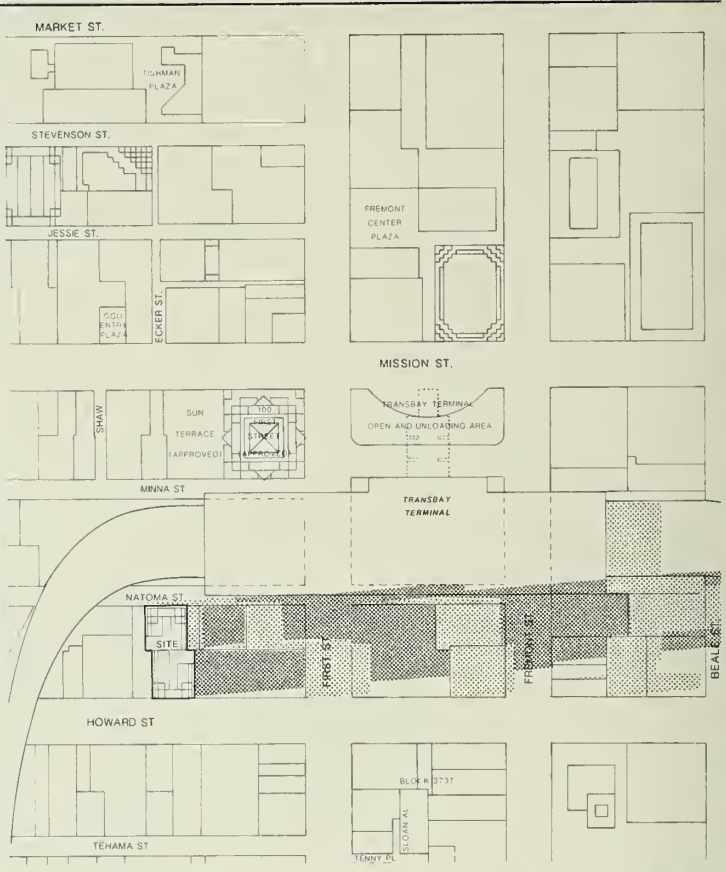

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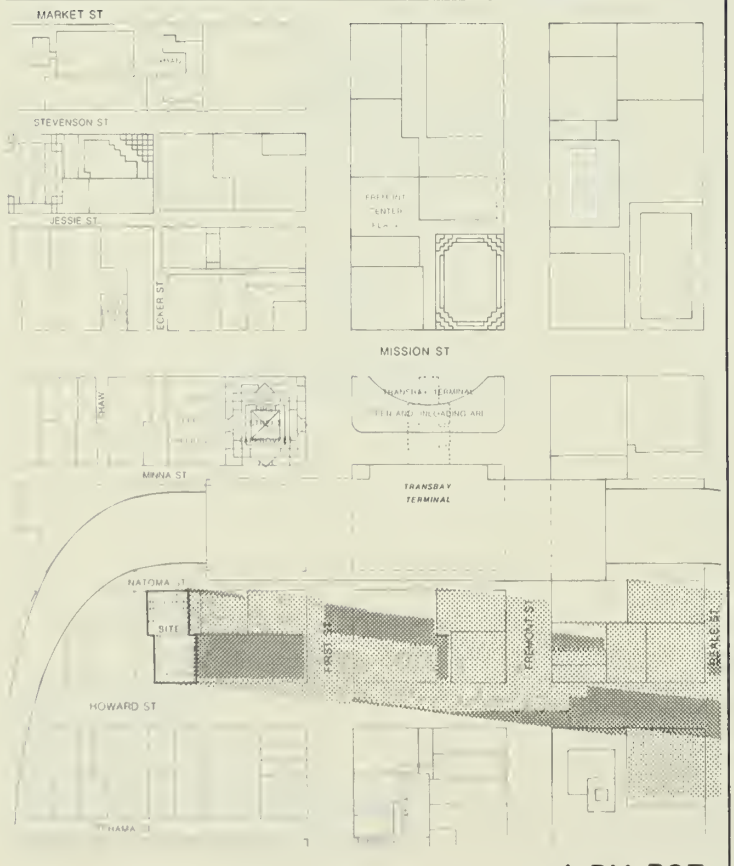


4 PM PST

LEGEND

SHADOW FROM EXISTING AND APPROVED BUILDINGS

NET NEW SHADOW FROM PROJECT

0 FEET 500

FIGURE 20b
524 HOWARD
SHADOW PATTERNS–
DECEMBER AFTERNOON

SOURCE: ESA

Fremont St. between Howard and Natoma Sts. would be shaded. At 4 p.m., project shadows would extend past Beale St. and the project would shade Howard St. east of Fremont St.

WIND/1/

Winds in San Francisco are generally strongest in the summer. Prevailing winds are from the northwest, west-northwest, west, and west-southwest. Wind tunnel measurements were made at 20 test locations around the project site for each of the four prevailing wind directions. Wind test data were combined with wind records to predict the wind speeds that would be exceeded 10% of the time at each test location. The predicted winds were then compared to the comfort and hazard criteria contained in Section 148 of the City Planning Code. (See Appendix B, p. A-19, for a summary of the full wind analysis.) Throughout the following discussion, the wind speeds reported refer to the equivalent wind speeds that would be exceeded 10% of the time.

The existing wind speeds are seven mph or less at 18 test locations (see Appendix B, Table B-1, p. A-22, for a map showing the locations and wind speeds at the test points) and eight to ten mph at two other locations. All locations meet the 11 mph pedestrian comfort criterion. The windiest location (No. 15) is on Howard Street across the street and just east of the proposed project (see Appendix B, Figure B-1, p. A-22.

The project would cause winds to increase at nine locations, remain the same at three locations, and decrease at eight locations. The range of winds would be 3 to 13 mph. Winds would increase along Natoma St. and decrease at the intersection of Howard and First Sts. The results would be mixed along the north side of Howard St. where winds would increase at three locations (locations 12, 13 and 15; see Appendix B, Figure B-1, p. A-22, and Table B-1, p. A-22) and decrease at three locations (locations 11, 14 and 16). Winds would exceed the 11 mph pedestrian comfort criterion by two mph at one location (location 15).

The project would require an exception to windspeed reduction requirements and from meeting the 11 mph windspeed comfort criterion as provided in Section 148(a) subject to approval under Section 309.

NOTE - Shadow and Wind

/1/ This section is based on a study entitled Wind-Tunnel Study, 524 Howard Street Building, August 1985, prepared by Bruce White, Ph.D. as a private subconsultant to Environmental Science Associates, Inc. A summary of the study findings is included in Appendix B, p. A-19, and the study data are on file at the Department of City Planning, Office of Environmental Review, 450 McAllister St.

D. HISTORIC, ARCHITECTURAL AND CULTURAL RESOURCES

The proposed project would result in the demolition of a garage that was not categorized as architecturally significant or contributory in the Downtown Plan, and which was rated "B" by Heritage and "2" in the 1976 DCP architectural inventory. Thus, the project may not respond to Objective 2, Policy 4 of the Urban Design Element of the Master Plan which states, "Preserve notable landmarks and areas of historic, architectural or aesthetic value, and promote the preservation of other buildings and features that provide continuity with past development." The project would not affect buildings in the vicinity categorized for architectural importance in the Downtown Plan or any conservation districts, since it is not in such a district and does not contribute to the quality of any such district. The project could affect the ratings of the several "C" rated buildings near the site because the "C" rating indicates a building of contextual value. This effect would be limited because the terminal ramp provides a visual break between the site portion of the block and the rest of the block. The project may not respond to Policy 6 of the above objective, to "Respect the character of older development nearby in the design of new buildings." The building represents a departure from the existing scale of the area and would dominate existing structures. Its neo-gothic design would be intended to relate to the design of the Pacific Telephone Building on New Montgomery St.

An archaeological resources report, titled "Cultural Resources Evaluation of Five South of Market Parcels, San Francisco, California," April 1985, was prepared for the proposed site by Allen Pastron, Archeo-Tec, Consulting Archeologists, and is on file with the office of Environmental Review, Department of City Planning, 450 McAllister St. The investigation does not provide conclusive evidence to support the presumption of the presence on site of cultural resources of potential significance.

According to archival research, the 524 Howard St. site was first developed during the early 1850s. Because the site was situated on a slope of a steep sand hill, early cultural remnants would have most likely been removed when grading took place in the early 1860s. A variety of structures, mostly working class dwellings and small, family-owned storefronts, existed at the site between the early 1860s and close of the nineteenth century. The proposed project would include excavation to a depth of about 13 feet, which would be below the foundation level of the existing building (probably less than five feet deep) and which would disturb soils probably not exposed since before 1910, when the existing building was built.

The site could contain cultural resources from the Prehistoric Period (ca 8000 B.C. - 1775 A.D.), the City Building Period (1858-1887), the Late Nineteenth Century Period (1887-1906), and, perhaps, the Twentieth Century Period (1906 - present). Archival research has produced no evidence to suggest that these materials would be noteworthy from either a historical or archaeological perspective./1/

NOTE - Historic, Architectural and Cultural Resources

/1/ Allen Pastron, Ph.D., Archeo-Tec, April 1985, "Cultural Resources evaluation of Five South of Market Parcels, San Francisco, California.

E. TRANSPORTATION

DEMOLITION, EXCAVATION AND CONSTRUCTION TRAFFIC

During the entire 19-month construction period, transportation impacts would result from truck movements to and from the site during demolition, excavation, and construction activity. Demolition would require about two months, and would generate an average of ten truck movements per day in and out of the project site, between 9:00 a.m. and 4:00 p.m. Excavation would require an additional three months and would generate an average of 40 truck movements per day in or out of the project site, between 9:00 a.m. and 4:00 p.m. Trucks would most likely use Howard St. to Fourth St. to the freeway ramp at Fourth and Harrison Sts. to haul debris and excavation material to a disposal site in South San Francisco. Construction activities (steel erection and finishing) would generate an average of 15 and a maximum of 40 truck movements per day during the 13.5-month period.

Construction truck access to the site would be from both Howard and Natoma Sts. During the entire 19-month construction period, approximately 74 ft. of sidewalk fronting the project site on Howard St. and on Natoma St. would be closed. The curb lanes on Natoma and Howard Sts. would be closed to provide a pedestrian detour. Lane and sidewalk closures are subject to Department of Public Works and Muni review.

Materials storage is proposed to be off-site, and would generate construction vehicle trips to the site. Temporary parking demand by construction workers' vehicles, and impacts on local intersections from construction worker traffic, would occur in proportion to the number of construction workers who would use automobiles.

The impact of construction truck traffic would be a slight lessening of the capacities of access streets and haul routes because of the slower movements and larger turning radii of trucks. Any truck traffic from 7:00 a.m. to 9:00 a.m. or from 4:00 p.m. to 6:00 p.m. would coincide with peak-hour traffic, particularly at freeway access points. Lane blockage on Howard St. by queued trucks, if it were to occur, would reduce the capacity of this street. Blockage during times of peak traffic flow would have greater potential to create conflicts than during non-peak hours because of the greater peak-hour interaction between vehicles in adjacent lanes and vehicles moving around the queued trucks.

Travel Demand

On the basis of land use, the project would generate about 5,380 net new person trip-ends (pte) per day./1/ Since the site is currently occupied by a parking lot, no existing travel has been subtracted from project-generated travel, as existing trips would still be made to the area. The trip generation calculations include travel to and from the project site by both visitors and employees of the project. Additionally, although expressed on a person trip-end basis, the trip generation includes all travel to and from the project in autos, service vehicles and trucks, on public transit and by other modes (i.e., walking, bicycles, taxis, etc.). Projected outbound (peak commute direction) p.m. peak-period and peak-hour trips by mode expected to be generated by the project are shown in Table 3. About 760 new outbound trips

from the project would occur during the p.m. peak period, of which about 470 would occur in the p.m. peak hour./2/

TABLE 3: PROJECTED OUTBOUND TRAVEL DEMAND BY MODE FROM 524 HOWARD STREET (pte/a/)

Travel Mode	P.M. Peak Period/b/ 1984	P.M. Peak Period/b/ 2000/c/	P.M. Peak Hour/b/ 1984	P.M. Peak Hour/b/ 2000/c/
Drive Alone	115	100	75	60
Car/Vanpool	100	100	75	80
Muni	190	180	100	95
BART	110	135	75	90
AC Transit	40	35	25	20
SamTrans	10	10	5	5
SPRR (Caltrain)	15	15	10	10
GGT Bus	25	30	15	20
Ferry	5	5	5	5
Walk Only	140	140	80	80
Other	10	10	5	5
TOTALS	760	760	470	470

/a/ Person trip-ends.
/b/ The peak hour occurs during the two-hour peak period of 4:00 to 6:00 p.m.
/c/ The year 2000 modal split accounts for changes in travel behavior which are assumed to occur as a result of growth in downtown San Francisco.

SOURCE: Environmental Science Associates, Inc.

Assignments to travel modes for the project have been made on the basis of modal splits from the Downtown Plan EIR (EE 81.3) for the years 1984 and 2000./3/ The 1984 modal split has been used for the purpose of identifying impacts at the single-project level (as opposed to impacts at the cumulative level). The year 2000 modal splits have been applied to the project travel for the purpose of comparing project travel with cumulative future travel demand on the transportation system serving San Francisco (see Regional Cumulative Impacts, pp. 88-96). The modal splits used were derived from aggregate data for the C-3 District, the zoning district that contains the project site, and thus represent an average condition. The actual modal split for travel from the project may vary from the C-3 District average. However, because the travel demand forecasts used to derive the average modal split data include the travel from the project, application of the average modal

split data to project travel has been assumed to be sufficiently accurate for purposes of comparison.

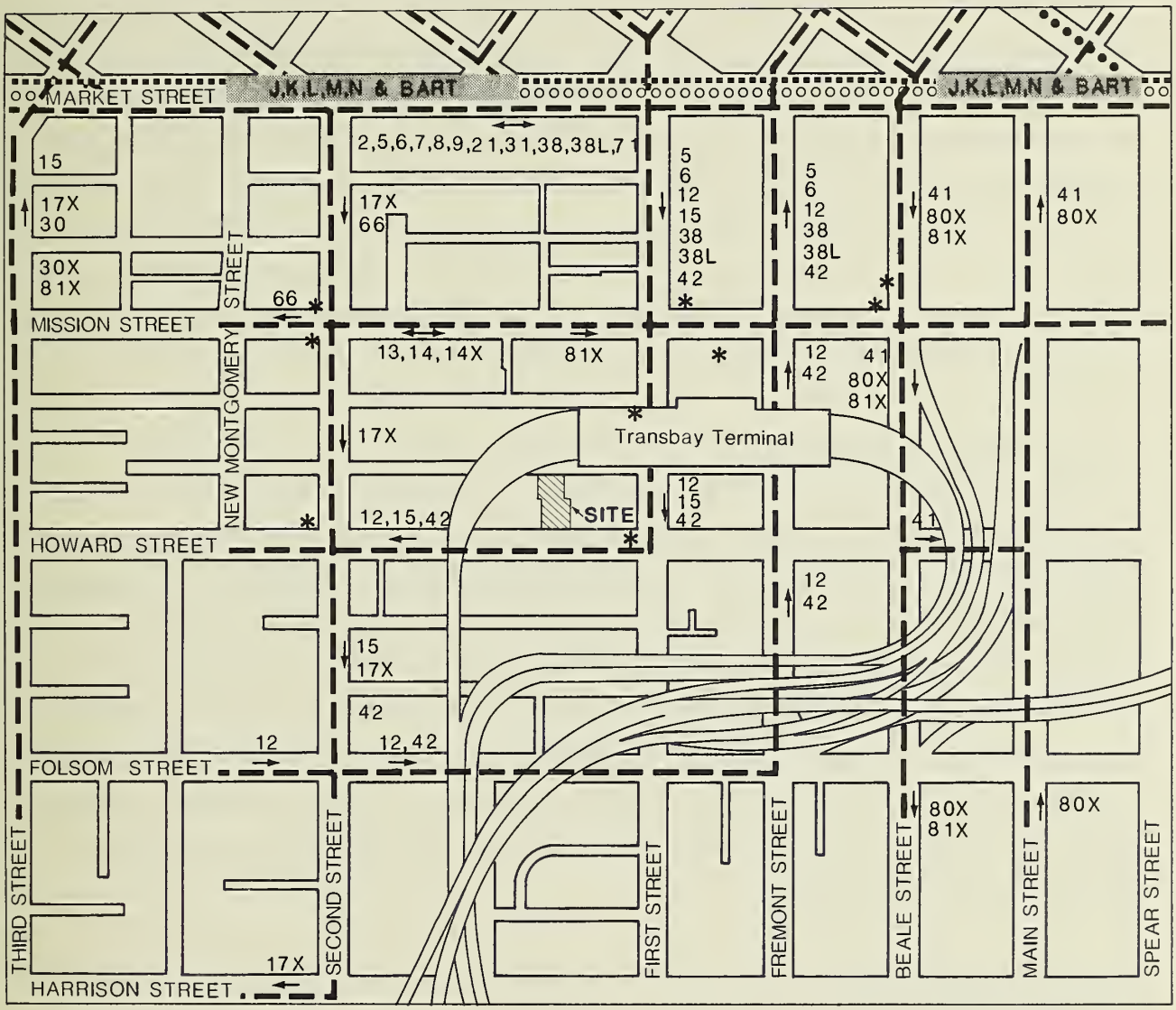
Parking demand was projected for the 524 Howard St. project on the basis of the estimated vehicle traffic generated by the project. The project's land uses would create new demand for about 180 long-term spaces and about 15 short-term spaces, for an equivalent net new daily demand of 195 spaces.

The project would relate to several objectives and policies of the Transportation Element of the San Francisco Master Plan which call for the reduction of vehicle travel in the downtown area./4/ Specifically, the project would respond to Objective 1, Policy 7, to "seek means to reduce peak travel demand." As required by Section 163 of the City Planning Code, a member of the building management staff would be designated as a "transportation broker" to coordinate measures that are part of a transportation management program, such as: encouraging a flexible time system for employee working hours (to be developed by project tenants in consultation with the Department of City Planning) to reduce peak-period congestion by a planned spreading of employee arrivals and departures; encouraging transit use through the on-site sale of BART, Muni, and other carriers' passes to employees; and encouraging employee carpool and vanpool systems in cooperation with RIDES for Bay Area Commuters by providing a central clearinghouse for carpool and vanpool information.

Local Transit

There are at least 10 Muni routes with stops within one block of the project site. The Transbay Transit Terminal is located one block northeast from the site. Muni Metro and BART service in the Market St. subway are accessible via the Montgomery St. station. Figure 21, p. 83, shows Muni and BART routes in the project area. Photographic examples of p.m. peak-hour loadings on Muni vehicles are shown in Appendix C, Figures C-1, pp. A-24 - A-26.

As shown in Table 4, p. 92, Muni operations in the four corridors of San Francisco are currently in Level of Service D and E, and BART is operating currently at Level of Service F transbay and in Level of Service D in the westbay. Table C-1, Appendix C, p. A-23, contains descriptions of the



BART AND MUNI METRO STATION

BART ROUTE

MUNI BUS TRANSIT ROUTE

TRANSIT ROUTE

CABLE CAR ROUTE

1,2,3,J,K,L ROUTE DESIGNATION

→ ROUTE DIRECTION

* BUS STOP WITHIN ONE BLOCK OF SITE

SOURCE:
MUNI SAN FRANCISCO STREET AND TRANSIT MAP, JUNE 1984 AND ESA

FIGURE 21
524 HOWARD
MUNI AND BART ROUTES
IN THE PROJECT AREA

various Levels of Service for bus transit. In the p.m. peak hour, the project would generate about 100 new Muni trips and about 75 new BART trips outbound from the project site. Addition of the project p.m. peak-hour Muni riders to the existing (1984) Muni ridership would not increase the loading ratios on any Muni corridors, and thus would not change the Level of Service (from D and E). Muni riders from the project would not be sufficient to affect Muni operations in any of the four corridors. Addition of BART riders from the project to the existing BART ridership would not increase the p.m. peak hour transbay or west bay loading ratios or Level of Service.

Transit Corridor Analysis

The project would contribute to increases in transit ridership in the major transit corridors leading from downtown San Francisco. Existing peak-period and peak-hour transit ridership (see Table 4) would be increased by 0.1% to 0.3%, with the greatest increases from the project riders occurring in the Muni northwest corridor. Ridership increases of this magnitude would not be measurable against the day-to-day fluctuations in transit ridership and would not have a noticeable effect on transit levels of service. Transit impacts caused by cumulative development are discussed in the Regional Cumulative Impacts section, pp. 88-96.

Project Transit Costs

Muni. The estimated 1981-82 (most recent available) net marginal cost (or increase in the deficit for Muni operations) per additional ride is $0.50./5/ This deficit-per-ride figure, because it is a marginal cost, is appropriate for small increases in Muni ridership (such as that requiring one or a few additional vehicle trips). Assessments of costs that would result from cumulative development require the inclusion of additional cost factors and may be best projected using average costs./6/ It is reasonable to conclude that average costs would be significantly higher than marginal costs.

The project would generate about 90,700 peak-period peak-direction rides per year in the year 2000, which would generate a cost deficit to Muni of about $45,400, assuming that the cost per ride deficit remains the same./7/ (This conclusion should be qualified because the Muni deficit-per-passenger-trip

figure is based on 1981-82 data, and because the total project-generated deficit is calculated only for those riders who use Muni as their primary mode of transportation, excluding riders who would use a combination of transportation carriers, such as Muni and Caltrain. More recent data that would allow a more precise estimate of costs are not available.) The project would offset this deficit through its contributions to the General Fund, the Transit Impact Development Fee, and sales tax revenues.

On April 27, 1981, the San Francisco Board of Supervisors approved Ordinance 224-81 establishing the Transit Impact Development Fee (TIDF) to support the additional operating costs and capital improvements for Muni transit services associated with new downtown commercial development. The ordinance established a one-time fee of up to $5.00 per gross sq. ft. upon occupancy of new office space within the greater downtown area; the 524 Howard project site is located within the fee assessment area. The TIDF ordinance has been in litigation almost since its inception. On January 4, 1985, the San Francisco Superior Court issued a final decision upholding the ordinance. On March 12, 1985, the plaintiffs, a group of downtown property owners, appealed. Money has been collected pursuant to the ordinance, and is being deposited in an escrow account, pending resolution of the litigation. Under the ordinance, the project would generate about $1.1 million in one-time fee revenues to Muni. The fee is intended to recover additional transit costs for the entire economic life of a building, and thus cannot be compared directly to the annual Muni deficit discussed above. The fees collected under the ordinance would, however, reduce the amount of General Fund revenue support necessary for existing and future Muni operations.

The project would also offset Muni's annual operating deficit attributable to the project through its contributions to General Fund revenues, which would be derived from a variety of taxes levied on the proposed project. In the past, a portion of General Fund revenues have been allocated to Muni. The historical level of contribution of General Fund revenues to Muni could change, however, if the TIDF is upheld. Because of the variable relationship of the sources from which Muni receives operating funds, the annual General Fund contribution from the project to Muni cannot be quantified.

General Objective 1, Policy 6 of the Transportation Element states as a goal to "develop a financing system for transportation in which funds may be allocated without unnecessary restriction for priority improvements according to established policies." (p. 11) The project sponsor has agreed to participate in legally adopted funding measures for Downtown transit funding, proportional to demand created by the project.

BART. For the year ending June 30, 1985, the average net operating deficit per passenger trip for BART was about $1.20./8/ On the basis of about 162,540 rides per year in the year 2000, the estimated annual BART deficit attributable to the project would be about $195,000, assuming that the cost per ride deficit remains the same./9/ The project would generate a total of about $10,400 in revenues to BART, including about $2,800 in property tax revenues, and about $7,600 from the 75% of the 0.5% transit sales tax allocated to BART. This amount does not include the remaining 25% of the 0.5% BART sales tax revenue distributed by MTC among BART, Muni and AC Transit. After subtraction of BART's revenues from sales and property taxes that would be generated by the project, the net operating deficit of BART due to the project would be about $184,600. BART's operating deficit per passenger is likely to decline in real terms as planned service improvements become operational in the future.

Pedestrian Movements

The project would have a through-block arcade with access to ground-floor retail areas and office elevators from the arcade. The arcade would have primary pedestrian access from Howard St. and would extend through to Natoma St. The project at full occupancy would generate about 230 pedestrian person trip-ends (pte) during the noon 15-minute period, about 160 pedestrian pte during the p.m. peak 15-minute period. Pedestrian travel destinations were estimated on the basis of projected major travel modes. Pedestrian trips were assigned to sidewalks and crosswalks on the basis of these destinations.

Operating conditions on sidewalks and crosswalks have been evaluated in terms of pedestrian flow categories or regimen, which relate the density of pedestrians in a specific time period (pedestrians per foot of clear sidewalk width per minute) to the quality of pedestrian flow (the difficulty of

maintaining walking paths and speeds on a sidewalk)./10/ Appendix C, Table C-2, p. A-27 shows the relationships among flow rates, walking speed, path choice, and interaction among pedestrians for each flow regime. Appendix C, Figure C-2, pp. A-28 - A-29, shows photographs of sidewalk conditions for each flow regime. Typically, an upper limit for desirable conditions is 14 pedestrians per foot per minute (p/f/m), defined as crowded, although conditions as high as 18 p/f/m, a congested condition in which pedestrians are subjected to extreme crowding, have been documented./10/

Table 5, p. 98, summarizes pedestrian flow conditions on the Howard St. and Natoma St. sidewalks and crosswalks at the intersections of Howard St. with First and Second Sts. These sidewalks and crosswalks currently operate in open, unimpeded and impeded conditions during both the noon-peak 15-minute period and 15-minute p.m. peak period./11/ Conditions on these sidewalks and crosswalks following addition of the project pedestrian travel to the existing (1984) volumes would increase slightly but would still be in the unimpeded and impeded range during both the noon and p.m. peak 15-minute periods. Although some conditions would be in the impeded range, there would continue to be adequate facilities for pedestrians on the sidewalks adjacent to the project.

Local Intersection Traffic

Project impacts at the intersections closest to the project site (First and Second at Howard) would result primarily from service-vehicle and pedestrian traffic and from traffic using the proposed 45 on-site spaces. However, traffic to the project site itself would be expected to decrease in the future, so that project-related trips on local intersections would be less than at present. This is because the project would be eliminating a 100-space parking lot which generates primarily peak-hour traffic since it provides mostly long-term commuter parking, and replacing it with 45 spaces of primarily short-term parking (the rate structure would be such as to discourage long-term parking). Persons coming to the project and desiring long-term parking would be expected to park elsewhere (probably in lots to the south) rather than drive to the site and pay a higher rate.

Freeway On-Ramp Analysis

Traffic operations for two intersections serving freeway on-ramps near the project site are shown in Table 6, p. 99. During the p.m. peak hour, the intersection of Fourth and Harrison Sts. currently operates in Level of Service C conditions. The intersection of First and Harrison Sts. currently has Level of Service F conditions during the p.m. peak hour. Operations at Levels of Service F represent unacceptable delay to motorists. Queues of vehicles are present during the p.m. peak hour on the approaches to the on-ramp at First and Harrison Sts. Vehicles from the project would be expected to contribute to the existing jammed conditions at this intersection. The project effects at the intersection of Fourth and Harrison Sts. would not be sufficient to change either the v/c ratio or Level of Service during the p.m. peak hour.

Freeway Corridor Analysis

The project would contribute to increases in traffic on the major freeways serving downtown San Francisco. Traffic generated by the project would increase total traffic on major freeways during the p.m. peak period and the p.m. peak hour by about 0.1%. Such increases would not be measurable against the day-to-day fluctuations in traffic volumes. Because the Bay Bridge eastbound traffic flow is functionally at capacity, the travel demand from the project would not be expected to increase the flows on the Bay Bridge in the peak hour; rather the East Bay-bound auto traffic from the project would most likely compete with and possibly displace existing users of the Bay Bridge into later portions of the peak period. This competition for access would occur at the on-ramps to the Bay Bridge and any displacement of existing users to later time periods would depend upon the time of arrival of project vehicles at the on-ramps. Freeway impacts caused by cumulative development are discussed in the Regional Cumulative Impacts section, following.

REGIONAL CUMULATIVE IMPACTS

To date, cumulative analysis of transportation impacts has been conducted on the basis of a list of proposed development in the greater downtown area. The Downtown Plan EIR method is a refinement of the transportation analysis

process that uses forecasts of employment growth, independent of a list of proposed projects, to project future travel./12/

The travel data presented in the Downtown Plan EIR transportation sections (and in the transportation analyses for this report) are projections of total demand on the transportation system serving San Francisco. The projections comprise three components of travel demand. Two of the components were developed through an intricate travel modelling process for the C-3 District of San Francisco. These first two components of travel demand are C-3 District work (employee journey to and from work) travel and C-3 District non-work (all other) travel. The third component is non-C-3 District travel, which was forecast through an analysis of regional trends adjusted for the effect of development in the C-3 District. Non-C-3 travel is defined as travel that has neither an origin nor a destination in the C-3 District. Thus, non-C-3 travel includes travel to and from other parts of downtown and trips through San Francisco from other parts of the region. Employment forecasts are not specifically used in the non-C-3 travel analysis.

Because of the magnitude of the information contained in the Downtown Plan EIR, it is necessary to summarize portions of that information in this document so that there may be a better comprehension of the cumulative transportation projections. The following discussion highlights the basic points of the cumulative future travel demand projections.

Summary of Downtown Plan EIR Method. The Downtown Plan EIR method projects future travel on the basis of modal splits that are assumed to change over time in response to transit service improvements and to increased levels of peak-period congestion on auto facilities. The transit service improvements assumed to occur by the year 2000 correspond to the vehicle acquisition portions of the Five-Year Plans for Muni, AC Transit, SamTrans, CalTrain, and Golden Gate Transit. For BART, both the vehicle acquisition program and the trackage improvements (Daly City Turnback/Storage Facility and the KE track, also known as the "Oakland Wye") were assumed to occur.

The Downtown Plan EIR transportation analysis also assumes that regional auto use will continue to change over time in response to increasing levels of congestion on the bridges and freeways serving the City. The analysis

projects a shift from single-occupant auto use (drive alone) for commuting to ridesharing (carpool, vanpool) and to transit use. The assumptions of continuing shift from auto to transit and ridesharing, most apparent in the year 2000 modal splits, are made on the basis of long-term trends in transit use in the San Francisco commute corridors. Census data show that in the period 1970 to 1980, transit use for commuting to downtown increased. Similarly, Bay Bridge data show that ridesharing has been increasing over the last seven years./13/ Thus, the shift to transit and ridesharing is well-established in San Francisco commute corridors.

The Downtown Plan EIR approach for forecasting future land use, employment, and residence patterns is based on a conceptual framework of the process of urban economic development. The analytical procedures incorporate a variety of types and sources of data and information concerning past, current, and likely future conditions regarding economic, real estate, demographic, and public policy factors./14/ The employment forecasts have been used as the basis for the travel demand modelling process. As described above, the C-3 District travel constituted two of the three components of total travel. Because of the use of the employment forecasts in the travel demand modelling process, the transportation projections for the year 2000 are independent of lists of cumulative development.

The travel demand modelling process comprises the following steps:

- Trip generation rates (empirical measures of total travel to and from a specific land use) were applied to C-3 District employment forecasts by business activity (i.e., different rates were used for various land uses).
- The total travel from the C-3 District was distributed to seven Bay Area zones on the basis of forecasts of future employee residence patterns and origin-destination patterns for non-work travel.
- Trips to each of the seven regional zones were assigned to travel modes on the basis of modal splits (distribution of travel over the transportation modes, auto, transit, etc.) developed from the C-3 District surveys.

The total future travel demand was calculated by summing C-3 District work and non-work travel and non-C-3 travel at sub-regional measuring points (called screenlines) located at or just beyond the San Francisco County Line (except for Muni and BART Westbay service which were measured inside San Francisco, outside the downtown).

The non-C-3 travel demand was forecast through the use of growth factors developed on the basis of historic trends in regional and sub-regional travel./15/ Historic growth rates (factors) have been used to project increases only for non-C-3 District travel at the regional screenlines. No other use of historic growth rates has been made in the transportation analysis. Because of the individual and unique nature of each of the transportation screenlines, each growth rate is based on data for that location. Thus, the growth rates for freeways project growth in auto trips, while the growth rates for transit project growth in ridership. Each of the historic growth rates inherently contains information about regional growth in travel patterns and thus incorporates not only growth from other parts of San Francisco, but from elsewhere in the region. As an example, the historic growth factor for trips southbound on US 101 includes travel that crosses the Bay Bridge or the Golden Gate Bridge as well as travel from San Francisco. However, the growth is projected as growth in auto travel and cannot be directly related to growth in employment in San Francisco.

Transit

The transit agencies serving downtown San Francisco carry approximately 60% of the peak-period employee work travel, as well as about 20% of the peak-period other travel. Table 4 shows p.m. peak-hour and peak-period loadings on the local and regional transit routes. The transit analysis calculates capacity on the basis of all runs leaving the C-3 District in the p.m. peak. For all of the transit analyses, only peak direction vehicles are counted. The values shown in Table 4 are sums over the peak hour and the two-hour peak period. Within the peak hour, there would be periods of time when the loading ratios would be higher than those shown for the hour (peak-of-the-peak conditions). Individual transit vehicle loadings vary on a day-to-day basis because of fluctuations in ridership (demand) and because of variations in operating conditions caused by traffic congestion, equipment availability, and/or system breakdowns.

Because the transit system serving San Francisco also provides service to other parts of the Bay Area, there are competing and conflicting demands placed upon the transit network by riders with destinations other than downtown San Francisco. The locations of the analysis screenlines are such

TABLE 4: OUTBOUND REGIONAL TRANSIT DEMAND AND LEVEL OF SERVICE

	1984			2000			
Transit Agency	Riders	P/S/a/	LOS/b/	Demand	P/S	LOS	Project Percent/c/
P.M. Peak Hour							
Muni - Northeast	7,100	1.16	D	8,800	1.05	D	0.2
- Northwest	8,200	1.26	E	10,100	1.25	D	0.3
- Southwest	13,500	1.45	E	16,600	1.42	E	0.2
- Southeast	5,300	1.06	D	7,400	1.01	D	0.1
BART - Transbay	16,100	1.53	F	27,900	1.42	E	0.3
- Westbay	7,700	1.10	D	10,100	1.06	D	0.2
AC Transit	9,100	0.94	C	10,500	1.08	D	0.2
GGT Bus	5,300	1.00	C	8,500	0.91	C	0.3
GGT Ferry	800	0.57	B	1,500	0.38	A	0.1
Tiburon Ferry	200	0.40	A	300	0.60	B	0.1
SamTrans	1,900	1.12	D	3,100	1.19	D	0.3
CalTrain (SPRR)	3,100	0.61	B	4,900	0.79	C	0.3
P.M. Peak Period							
Muni - Northeast	12,600	1.06	D	15,500	0.95	C	0.2
- Northwest	13,100	1.13	D	15,300	1.05	D	0.3
- Southwest	23,300	1.31	E	28,700	1.29	E	0.2
- Southeast	9,100	1.00	C	12,100	0.88	C	0.2
BART - Transbay	25,800	1.54	F	44,100	1.40	E	0.3
- Westbay	11,300	0.80	C	14,600	0.77	C	0.2
AC Transit	14,000	0.95	C	17,000	1.16	D	0.2
GGT Bus	7,600	0.90	C	12,200	0.81	C	0.3
GGT Ferry	1,000	0.56	B	1,700	0.33	A	0.2
Tiburon Ferry	300	0.60	B	500	1.00	C	0.2
SamTrans	2,900	1.12	D	4,500	1.15	D	0.3
CalTrain (SPRR)	4,500	0.68	B	6,200	0.77	C	0.3

/a/ Passengers per Seat is the ratio of total demand to seated capacity.
/b/ Level Of Service is scale ranging from A to F that relates P/S ratios to passenger loading conditions on transit vehicles (see Table C-1, Appendix C).
/c/ The percent of demand generated by the project.

SOURCE: Environmental Science Associates, Inc.

that the amount of San Francisco travel on the transit system is at or near a maximum at each screenline. The location of the screenlines is such that it may appear that travel demand from other development in the areas served by the transit network may not be included in the cumulative analysis. BART is the only transit system analyzed that provides substantial service to destinations other than San Francisco. While it is true that eastbound, southbound, and northbound travel from downtown Oakland development cannot be counted at the eastbound transbay screenline, BART's ridership is most concentrated in the Transbay Tube (its maximum load point). Analysis has shown that the eastbound loadings experienced in the Transbay Tube equal or exceed loadings observed on the same BART lines at the next set of BART screenlines which include all BART activity within the downtown area of Oakland. Thus, on the basis of maximum load point locations and system loading characteristics, use of the transbay screenline for San Francisco travel analysis is appropriate, since the maximum eastbound BART loadings occur at this screenline.

All other transit service analyzed provides radial service to San Francisco on an almost-exclusive (express) basis. Under the operating charters of Golden Gate Transit, AC Transit and SamTrans, the three transit agencies are not allowed to provide local service within the City and County of San Francisco (e.g., a person boarding in the City must remain on the transit vehicle until crossing the County line before departing). By its very nature, express service to San Francisco provided by transit agencies means that there are limited opportunities for riders to board and depart outside of San Francisco (e.g., most express service has a very limited service area where local service is provided). Consequently, the majority of riders on transit vehicles providing express service to San Francisco are destined for San Francisco. Increased commercial development in areas between the origins of the express routes and San Francisco has little effect on the ridership patterns of the express service since persons wishing to use transit to reach such new areas of commercial development would use local transit service or express service directed to the new development, not express service to San Francisco. Although the service provided by SPRR/CalTrain to and from San Francisco is a mixture of local and express service, the system functions similarly to and has ridership characteristics similar to the express bus service to and from the City.

The Level of Service concept, similar to that developed for highway operations, has been applied to both bus and rail transit. Passengers per seat (i.e., total passengers divided by the number of seats) has been used as the measure of effectiveness to define the various level of service ranges. Table C-1, Appendix C, p. A-23, shows the relationship between Level of Service and passengers-per-seat (P/S) ratios for bus transit systems.

Passengers-per-seat ratios are only one measure of adequacy of service. The constraints of operating on heavily used streets in and around the downtown cause transit-vehicle bunching, loss of running time and missed schedules, all of which reduce service, reliability, and ultimately, capacity. In some respects, this would not be evident from simple quantitative analysis. The data in Table 4, p. 92, is taken from observed operations, not scheduled service, which inherently incorporates the reductions in capacity from operational considerations. In addition to these inefficiencies inherent within the transportation system, there are other factors which would affect overall transit capacities. These include variability in daily and seasonal ridership for which an absolute capacity must be available, as well as transit riders who remain uncounted because their transit trips both start and end beyond the screenlines used in this analysis. Daily fluctuations in fleet availability also affect system capacity.

During the p.m. peak hour in 1984, all of the transit agencies were found to be operating in Level of Service D or better, with the exception of BART transbay where conditions were found to be at Level of Service F, and Muni in the northwest and southwest corridors, where operations were found to be in Level of Service E.

P.m. peak-period conditions on transit in 1984 were found to be equivalent to or better than peak-hour conditions. In some cases, where demand remains at peak-hour levels during the two-hour period, the passengers-per-seat ratios in the two-hour period are higher than in the one-hour period. This anomaly is the result of express (or additional) service provided by transit agencies during the peak hour, but not during the entire peak period. An example of this type of operation may be seen on BART, where three extra trains operate in transbay service in the peak hour but not in the rest of the peak period.

Another factor involved is the distribution of demand (ridership) at uniformly high levels over the peak-period.

Both transit demand and capacity have been assumed to increase during the period 1984 to 2000. The discussions of transit capacity increases for the agencies are based on the Five-Year Plans and Capital Improvement Plans of the various transit agencies; they appear in Appendix J of the Downtown Plan EIR, pp. J.25-J.26. This material, which is discussed below and summarized in Table 4, is incorporated by reference. The future capacities were developed by applying percentage increases, expected in the future, to observed existing capacity. Thus, to the extent that the existing conditions contain inherent capacity reduction for missed runs, the future capacity projections have taken into account the inability of the transit systems to provide 100% of scheduled capacity. As noted above, the Muni analysis calculates capacity on the basis of all runs leaving the C-3 District in the p.m. peak. For all of the transit analyses, only peak-direction vehicles are counted.

Future transit demand and loadings for the Downtown Plan in the year 2000 are shown in Table 4, p. 92, for both the peak hour and the peak period. The total transit demand from the project would represent about 0.2% of the total travel demand on the transit carriers in the year 2000, under these conditions.

Peak-hour transit demand on Muni in the year 2000 would increase about 25% over 1984 levels in the northeast, northwest and southwest corridors. Muni demand in the southeast corridor would increase about 40% between 1984 and 2000. Peak-hour demand on the other agencies would increase between 30% and 70% during the period 1984 to 2000.

Peak-period increases in demand would be between 15% and 70% from 1984 to 2000. Overall peak-period transit travel would be expected to increase about 30% between 1984 and 2000. Peak-hour and peak-period passenger loadings would be worse than in 1984, although most systems would operate in acceptable conditions (Level of Service D or better). However, BART Transbay and Muni to the southwest would be in Level of Service E during the peak hour and the peak period.

It is important to note that the Five-Year Plan improvements for the transit systems are designed both to provide for future demand increases, and to improve service levels from existing conditions. For new vehicles to expand system capacity rather than represent replacement on a one-to-one basis, operating revenues would similarly need to be increased. During the year 2000 peak hour, Muni service to the southwest would exceed the desirable passengers per seat ratio of 1.25./16/ Although the transit demand in the corridors in excess of the desirable loading would be able to be accommodated under crowded conditions and thus would not be excess demand (that is, not beyond capacity), demand in excess of the desirable loadings would mean that additional transit service over that assumed to occur by 2000 would need to be provided to allow transit operations in the corridor to meet the goal set by Muni. To meet the goal of 1.25 passengers per seat in the peak hour, Muni would have to increase service by about 14% in the southwest corridor over the amount of service assumed to occur in 2000.

If transit service were not increased beyond the amounts assumed to occur by the year 2000 in the Downtown Plan EIR, transit operations (in terms of passenger comfort) would be slightly better than 1984 conditions. Peak-hour and peak-period passengers-per-seat ratios would be lower than 1984 ratios since service (in some corridors) has been assumed to increase as much as 80% between 1984 and 2000.

If the Downtown Plan's Goals regarding increased transit use were achieved, and the proposals in the Plan regarding transit service improvements were to be fully developed and in place, the impacts on transit agencies would be less than described above. If the Goals were achieved, transit agencies would experience greater levels of demand than under this analysis but overall passenger loadings would be lower (and within desirable levels) because of increased transit service availability that would come about if the proposals stated in the Plan are developed. Section V.E (Mitigation Measures) of the Downtown Plan EIR contains measures that would provide the additional transit service required to mitigate the above impacts.

SPRR/CalTrain; Proposed Terminal Relocation. The project would affect a proposed relocation of CalTrain's downtown San Francisco train terminal. A possible extension of the CalTrain tracks to a proposed new underground

terminal adjacent to and south of the Transbay Terminal is currently under study. The main institutional advocate of this proposal appears to be the State Department of Transportation ("Caltrans") which has had prepared two interrelated terminal relocation studies focused on this site./17/ This CalTrain extension to a new underground terminal is included in one of the alternatives studied in the I-280 Transfer Concept Program./18/ In addition, the proposed CalTrain extension to a new underground terminal adjacent to the Transbay Transit Terminal has been included in one of the alternatives under evaluation by the Metropolitan Transportation Commission in its Peninsula Mass Transit Study, being conducted pursuant to State Senate Concurrent Resolution No. 74./19/

The proposed 524 Howard St. project site sits astride a portion of the proposed underground terminal location. If the project's construction could not accommodate the terminal, the project's construction could preclude relocation of the CalTrain Downtown Terminal to that proposed site. The Transbay Transit Terminal location is the only remaining alternative under consideration by Caltrans for relocation of the CalTrain to an underground station in the downtown core./20/

If the CalTrain Terminal were constructed in the proposed or some other central downtown location, ridership could increase above that projected under the Downtown Plan as analyzed in the Downtown Plan EIR. If the terminal were not constructed in a central downtown location, existing conditions and ridership projected in the Downtown Plan EIR would not change.

Pedestrians

Sidewalks and crosswalks adjacent to the project would operate in the year 2000 in the unimpeded and impeded range during the noon peak (see Table 5, p. 98). The project pedestrian traffic would represent about 54% and 59% of the pedestrian volumes on the Howard St. and Natoma St. sidewalks, respectively, and from about 28% to 66% of the pedestrian volumes on the crosswalks across Howard St., Second St. and First St. during the noon hour.

P.m. peak-hour operations in the year 2000 would also be in the unimpeded and impeded ranges. Project pedestrian traffic during the p.m. peak hour would

TABLE 5: PEAK PEDESTRIAN VOLUMES AND FLOW REGIMEN (project side of street)

	Total Width (feet)	Effective Width (feet)/a/	Existing		Existing Plus Project		2000		
			Flow p/f/m/b/	Flow Regimen/c/	Flow p/f/m	Project Regimen	p/f/m	Regimen	Percent
NOON PEAK /d/									
Howard St. sidewalk	12.0	9.3	0.2	Open	1.7	Unimpeded	2.6	Impeded	54%
Natoma St. sidewalk	5.0	3.3	0.04	Open	0.8	Unimpeded	1.2	Unimpeded	59%
Crossing Howard St. at Second St.	10.3	10.3	1.0	Unimpeded	1.6	Unimpeded	1.7	Unimpeded	33%
Crossing Second St. at Howard St.	9.2	9.2	1.3	Unimpeded	2.2	Impeded	2.1	Impeded	44%
Crossing Howard St. at First St.	6.7	6.7	1.0	Unimpeded	2.0	Unimpeded	1.5	Unimpeded	66%
Crossing First St. at Howard St.	8.4	8.4	1.0	Unimpeded	1.8	Unimpeded	1.6	Unimpeded	28%
P.M. PEAK/d/									
Howard St. sidewalk	12.0	9.3	0.8	Unimpeded	1.8	Unimpeded	2.9	Impeded	33%
Natoma St. sidewalk	5.0	3.3	0.6	Unimpeded	1.1	Unimpeded	1.7	Unimpeded	30%
Crossing Howard St. at Second St.	10.3	10.3	1.8	Unimpeded	2.2	Impeded	2.9	Impeded	13%
Crossing Second St. at Howard St.	9.2	9.2	2.1	Impeded	2.8	Impeded	3.4	Impeded	19%
Crossing Howard St. at First St.	6.7	6.7	3.2	Impeded	3.9	Impeded	5.1	Impeded	13%
Crossing First St. at Howard St.	8.4	8.4	1.0	Unimpeded	1.6	Unimpeded	1.6	Unimpeded	34%

/a/ The effective width is the narrowest portion of the sidewalk and is calculated by subtracting the space taken by poles, planter boxes, people standing at windows, etc., from the total width.
/b/ Pedestrians per foot of effective sidewalk width per minute.
/c/ See Table C-2 and Figure C-2, Appendix C, for descriptions of pedestrian flow regimens.
/d/ Peak 15-minute periods.

SOURCE: Environmental Science Associates, Inc., and Pushkarev and Zupan

represent about 33% and 30% of the pedestrian volumes on the Howard St. and Natoma St. sidewalks, respectively. Between 13% and 34% of the p.m. peak-hour crosswalk pedestrian volumes would be from the project.

Freeway On-Ramp Intersection Traffic

Future traffic operations at intersections near freeway on-ramps serving the project vicinity are shown in Table 6, below. For the year 2000 projections, 1984 traffic volumes were increased by a 19% average growth factor based on the Downtown Plan EIR traffic analysis. The growth factor represents a worst-case, unrestrained auto demand condition for street traffic in the downtown and, as such, is probably higher than actual traffic growth may be in the future in the downtown. Motorists confronted with increased delays on surface streets would be expected to alter their travel patterns to use less congested routes (to the freeway ramps) or to travel at different times (to avoid periods of traffic congestion). The intersections of Fourth and Harrison Sts. and First and Harrison Sts. are at Level of Service C and F, respectively, during the p.m. peak hour. Level of Service descriptions are shown in Table C-4, Appendix C, p. A-32. Peak-hour conditions would be expected to deteriorate at both of the intersections by the year 2000. Expanded areas of traffic congestion would disrupt surface Muni operations.

TABLE 6: PROJECTED PEAK-HOUR INTERSECTION VOLUME-TO-CAPACITY RATIOS (V/C) AND LEVELS OF SERVICE (LOS)/a/

	1984		1984 Plus Project		Downtown Plan (2000)	
Intersection	V/C	LOS	V/C	LOS	V/C	LOS
Fourth & Harrison Sts.	0.76	C	0.77	C	0.84	D
First & Harrison Sts.	1.11	F	1.13	F	1.34	F

/a/ Level of Service descriptions and relationship to V/C ratios are shown in Table C-3, p. A-31 of Appendix C.

SOURCE: Environmental Science Associates, Inc.

Muni operations would be adversely affected by increased congestion. Operation of Muni surface transit routes through the congested areas would be impeded; this would lead to decreased levels of Muni service since scheduled headways would not be met.

Regional Freeway Traffic

Analysis of traffic conditions at the regional screenlines has been conducted for both the p.m. peak hour and the two-hour p.m. peak period. A.m. peak traffic conditions at the regional screenlines have the effect of metering the amount of traffic that reaches the downtown from outside of the City. P.m. conditions are usually most severe on both freeways and streets within San Francisco, whereas a.m. peak conditions are most severe at locations outside of the City. This analysis has therefore considered p.m. peak conditions as most critical to the quality of flow on downtown streets.

The regional freeway system that serves San Francisco is an extensive network of roadways that also provides service to most of the major urban centers in the Bay Area. Consequently, there are many areas of commute-related congestion, some of which may experience worse conditions than at the screenlines analyzed in the Downtown Plan EIR and in this document. As noted in the Downtown Plan EIR, the screenlines were selected on the basis of their relationship to travel leaving San Francisco and thus, by their definitions, the screenlines are points of maximum effect of travel from San Francisco; at points further removed from the screenlines, San Francisco travel would be a lesser percentage of the total and thus the overall effects of San Francisco travel would be less than at the screenlines.

Traffic demand at the regional screenlines in 1984 (see Table 7, p. 101) during the p.m. peak hour was found to use between 90% and 100% of the available capacity on the freeways and bridges. Although the capacity of the Bay Bridge is calculated to be 9,000 vehicles per hour (vph), the 1984 peak-hour demand shown in Table 7 represents the effective capacity. The demand figures shown in Table 7 for 1984 for the one-hour and two-hour periods are averages of several days; thus, values for individual days may be different from the average.

TABLE 7: OUTBOUND REGIONAL AUTO DEMAND

Regional Auto Corridor	Capacity/a/	1984 Volume/b/	2000 Demand	2000 Project Percent
P.M. Peak Hour				
Bay Bridge (I-80)	9,000	8,540	9,790	0.1
Golden Gate Bridge (US-101)	7,200	6,740	7,150	0.1
US-101 (south of Harney Way)	8,000	7,390	8,400	0.1
I-280 (between Alemany Blvd. and San Jose Avenue)	8,000	7,610	8,650	0.1
P.M. Peak Period				
Bay Bridge (I-80)	18,000	17,880	19,330	0.1
Golden Gate Bridge (US-101)	14,400	13,870	14,850	0.1
US-101 (south of Harney Way)	16,000	14,200	16,530	0.1
I-280 (between Alemany Blvd. and San Jose Avenue)	16,000	13,620	15,890	0.1

/a/ Although the capacity of the Bay Bridge is calculated to be 9,000 vehicles per hour (vph), the 1984 peak-hour volume shown above represents the effective capacity.
/b/ The volumes for 1984 for the one-hour and two-hour periods are averages of several days and, thus, values for individual days may be different from the average.

SOURCE: Environmental Science Associates, Inc.

Peak-hour freeway operating conditions in 1984 were found to be generally in Level of Service D to E conditions which would indicate unstable flows in the 35 mph to 45 mph range. Table C-3, Appendix C, p. A-31, shows the Level of Service for freeway operations. Peak-of-the-peak conditions within the peak hour would be expected to be worse than the hourly conditions because of surges in traffic demand during the peak hour. Conditions during the peak-period at the screenlines would be similar to those experienced during the peak-hour.

As shown in Table 7, demand during the peak hour in the East Bay and Peninsula corridors would be expected to increase about 15% between 1984 and 2000. Peak-hour demand in the North Bay corridor would increase by about six percent between 1984 and 2000. The project travel demand, about 100 p.m. peak-hour

and 140 p.m. peak-period vehicle trip-ends, would represent about 0.1% of the total demand in each corridor in the year 2000. Both the East Bay and Peninsula corridors would have excess peak-hour demand that would not be met during the peak period./21/ The North Bay corridor would have excess demand in the peak period. Excess auto demand would result in either a spreading of the demand into the hours adjacent to the peak period or in increased transit and ridesharing use should additional transit service (beyond that assumed to occur by the year 2000) or ridesharing incentives be provided.

Operating conditions at the regional screenlines would be at or near capacity in Level of Service E. Traffic flow conditions would be expected to be very unstable and could experience temporary flow interruptions throughout the peak-period. Peak-of-the-peak conditions would be prevalent during the peak hour and may extend into the peak period. The overall two-hour commute period would not be expected to increase substantially in the future. Rather, the occurrence of peak-of-the-peak conditions, now less than one hour, would most likely expand to fill the one-hour peak.

OFF-STREET PARKING AND LOADING REQUIREMENTS AND DEMAND

Parking

The estimated parking demand (both long-term and short-term) from the C-3 District in 1984 was found to be about 45,300 spaces, which would occupy about 94% of the 48,000 parking spaces in and near the C-3 District. The short-term parking demand, while representing about 25% of the equivalent daily demand, is about 65% of the daily vehicle travel. Although the equivalent daily demand would leave about ten percent of the parking supply vacant, surges in short-term demand (more travel in one period than in another period) can cause temporary localized overloads of parking facilities within various portions of the downtown, even though parking may be available elsewhere in the downtown.

The project would provide 45 on-site parking spaces and would remove 100 existing spaces. The project would create net new long-term parking demand for about 180 spaces and net new demand for about 15 short-term spaces for a total demand of about 195 equivalent daily spaces. There would be an

on-site deficit of 150 spaces. In addition, the 100 vehicles currently using the garage would be displaced and would compete for other parking spaces.

As required by the City Planning Code, one space in the parking garage would be for handicapped parking. As required by Section 155(g) of the City Planning Code, all remaining parking spaces would be subject to rates that encourage short-term use and discourage all-day parking; the parking rate schedule would be reviewed and approved by the Department of City Planning, or alternatively, the project sponsor would agree to be bound by a formula, to be developed by the Department of City Planning, which structures rates to favor short-term parking.

The C-3 District would generate demand for approximately 58,000 equivalent daily parking spaces in the year 2000 under the Downtown Plan, an increase of 28% from 1984. Short-term demand would continue to represent about 25% of the total demand. The project parking demand would represent less than one percent of the total demand from the C-3 District. As noted in the Downtown Plan EIR, the parking supply in the year 2000 has been assumed to increase to about 51,000 spaces. There would be a parking deficit of about 6,000 spaces in that year if vehicular demand occurs as projected. However, as shown in Table 7, p. 101, the analysis for the year 2000 forecasts excess auto demand in the peak hour and the peak period. If the excess demand is accommodated on transit or ridesharing, the overall parking demand would decrease from the above estimate by about 2,300 spaces.

Alternatively, if the goals of the Downtown Plan are met, total parking demand in the year 2000 would be about 48,100 equivalent daily spaces, an increase of six percent over 1984. If the goals are achieved, there would not be a parking deficit.

Loading

Table 8 shows total service vehicle travel and average hourly service-vehicle demand for the project, based upon data published in Center City Circulation Program: Pedestrian Circulation and Goods Movement./22/ The new building would generate about 49 service vehicle stops per day. Average hourly loading space needs are given in terms of spaces per hour per 10,000 gross sq. ft. of

building space; average demand for the project would be about 2.4 spaces per hour and peak hourly demand would be 3.0 spaces.

TABLE 8: PROJECTED SERVICE-VEHICLE TRAVEL ATTRIBUTABLE TO THE PROJECT/a/

Use	Space (GSF)/b/	Daily Stops/ 10,000 sq. ft. of GSF/b/	Daily Stops	Spaces/Hour/ 10,000 sq. ft. of GSF/b/	Average Spaces/ Hour
Office	220,815	2.1	46	0.1	2.2
Retail/ Restaurant	9,200	3.0	3	0.2	0.2
TOTALS			49		2.4

/a/ Service-vehicle travel has been included in total travel calculated for the project.
/b/ Gross square feet of floor space.

SOURCES: Environmental Science Associates, Inc.; Department of City Planning, 1980, Center City Circulation Program.

Under the City Planning Code, the project would be required to provide two loading docks. The retail use in the project would not be of sufficient size to require additional loading facilities.

Two loading spaces, 35 ft. in length, would be located on the Natoma St. side of the project, served by a curb cut of about 25 ft. The basement parking level would be reached via a one-lane ramp with an additional 15-ft. curb cut, also located on Natoma St. The separation between the curb cuts would be about 25 ft. exceeding the minimum allowable separation of 20 ft. Traffic on the ramp would be controlled by a signal to be installed as part of the project.

The depths and other dimensions and number of docks conform to requirements as specified in Section 154(b) of the City Planning Code. Section 155(d) of the City Planning Code allows up to four freight loading and service vehicle spaces to be accessible directly from a service street or alley such as Natoma St. The project's two loading docks would be in conformance with the Code.

The potential for pedestrian vehicle conflicts would be increased by the service-vehicle traffic from the project crossing the Natoma St. sidewalk. Pedestrian volumes on Natoma St. are low, so the impact of project service-vehicle traffic would not be as great as it would be in a more heavily traveled pedestrian area, such as Howard St.

Analysis of the design of the proposed Natoma St. loading/service area indicates that standard single-unit trucks would be able to enter the loading area by backing in from an eastbound position on Natoma St., as required by Department of Public Works standards.

The project would include on-site storage for trash containers. Containers would not be placed on streets or sidewalks except during actual trash pickup. The project would provide containers to collect and store recyclable solid waste (such as glass, metal, computer cards, and newspaper) and the project sponsor would contract for recycling service.

NOTES - Transportation

/1/ San Francisco Department of City Planning, Transportation Guidelines for Environmental Impact Review: Transportation Impacts, September 1983. This document describes the procedure used to calculate travel demand from the project. Trip generation rates of 18.1 person trip-ends (pte) per 1,000 gross sq. ft. of office space and 150 pte per 1,000 gross sq. ft. of retail space were used to generate travel from the project. The two trip generation rates are for independent land uses. When used to generate travel from more than one land use on the same site the rates may overestimate total travel to the site since a portion of the travel from each of the land uses may occur between land uses on the site and not leave the site. Such trips are referred to as "linked trips." The calculations for this project have not been discounted to account for linked trips and thus present a "worst-case" scenario. The September 1983 Transportation Guidelines are on file and available for public review at the Department of City Planning, Office of Environmental Review, 450 McAllister St.

/2/ The percentages of travel occurring in the peak period and the peak hour are from the Transportation Guidelines. Total travel during each of the periods has been adjusted to show only outbound (leaving the downtown area in the peak commute direction) travel. The outbound travel consists of all of the work-related travel and half of the other (non-work) travel.

/3/ San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984. This document is an analysis of projected growth in the C-3 District to the year 2000 under the Downtown Plan and five alternatives. The transportation analysis in the EIR includes projections of future modal splits for work and other (non-work) travel for the p.m. peak period, peak hour, and daily time periods. This

document is on file with and available for public review at the Department of City Planning, 450 McAllister St.

/4/ San Francisco Department of City Planning, January 1983, Transportation, an Element of the Master Plan.

/5/ This deficit-per-ride figure is based upon information provided in: Touche Ross & Co., Transit Impact Development Fee Cost Study, Fiscal Year 1981-82, July 1983, Corrected September 9, 1983, and consultation with Bruce Bernhard, Chief Financial Analyst, San Francisco Municipal Railway, telephone conversations, October 11, 1984, March 20 and May 13, 1985. The calculation of the peak period marginal deficit (additional cost per ride minus additional revenue per ride) was done by ESA.

/6/ According to Muni, the appropriate technique for determining the costs to Muni of cumulative development is an average cost analysis which would include both capital and operating costs. Application of this technique, however, is limited because relevant capital cost data are not available from Muni. Further, capital costs are difficult to allocate on a person-trip basis as capital expenditures occur from time to time in large amounts, not necessarily annually. The established method of allocating capital cost is through depreciation, which is based on historical depreciation costs, not replacement costs. Such an estimate would be low in comparison with the costs of new capital improvements required for a single passenger trip. The use of existing capital cost data would underestimate future capital cost needs. Existing Muni accounting statistics do not enable future capital costs to be calculated on a per passenger trip basis (Bruce Bernhard, Muni Chief Financial Analyst, telephone conversation, March 25, 1985).

/7/ The deficit due to the project would be: 360 peak-period trips per day x 252 working days per year x $0.50 deficit = $45,360. The cost deficit estimate is based on the assumption that essentially all vehicles are operating at capacity during peak periods and additional riders would require new vehicle trips. During off-peak periods, it is assumed that all vehicles operate with excess capacity, resulting in an average off-peak marginal cost of zero. These cost estimates are appropriate for project costs to Muni of a single office building. Assessments of costs that would result from cumulative development require the inclusion of additional cost factors and may be best projected using average cost data. Muni does not have data that would enable it to estimate the average cost per passenger trip. It is reasonable to conclude that average costs would be significantly higher than marginal costs.

/8/ Ward Belding, Supervisor, Office of Research, BART, telephone conversation, September 27, 1985. The $1.20 average deficit per trip is based on all operating costs and revenues for the entire system and is not specific to San Francisco trips. Available data from BART do not enable peak and non-peak-period costs to be differentiated.

/9/ 645 BART trips per day x 252 days/year x $1.20 = $195,048.

/10/ Pushkarev and Zupan, 1975, Urban Space for Pedestrians, Cambridge, Mass., pp. 85-117.

/11/ Pedestrian counts were made by Environmental Science Associates, Inc. on Thursday, February 16, 1984.

/12/ The Downtown Plan EIR contains about 50 pages of text devoted to the description of transportation impacts in the greater downtown area, as well as an additional 30 pages of text describing transportation mitigation measures. The information in this EIR is not intended to be a comprehensive summary of the transportation analysis in the Downtown Plan EIR, but rather summarizes portions relevant to the project and its contribution to cumulative impacts. For details and assumptions used to arrive at the data and results presented in the Downtown Plan EIR, see Vol. 1, Section IV.E, Transportation Setting and Impact, Section V.E, Transportation Mitigation; Vol. 2, Appendix J, Transportation and Circulation Analyses and Methodologies; and Volume 3, Summary of Comments and Responses, which are incorporated by reference into this report and summarized in the text as appropriate.

/13/ In 1977, peak average vehicle occupancy westbound on the Bay Bridge was 1.7 persons per vehicle. By 1983, in response to increasing congestion and increased travel and parking costs, peak average vehicle occupancy westbound increased to 2.1 persons per vehicle. Data are from Traffic Survey Series A-48 and MA-60, Spring 1977 and Spring 1983, Metropolitan Transportation Commission.

/14/ The Downtown Plan EIR contains extensive discussion of the methods and results used to forecast future C-3 District land use and employment. Vol. 1, Section IV.B, Land Use and Real Estate Development; Section IV.C, Business and Employment; Section IV.D, Residence Patterns and Housing; and Vol. 2, Appendices G, Land Use and Real Estate Analysis; H, Business and Employment Analysis; and I, Theoretical Discussion of Housing Market Effects/Methodology for Forecasting Residence Patterns, of the Downtown Plan EIR, which contain detailed information about methods used to forecast future employment in the C-3 District, are incorporated by reference into this report and summarized in the text as appropriate.

/15/ The analysis of historic trends in travel patterns is from the following sources: Metropolitan Transportation Commission, Travel Observations of the Bay Bridge Corridor, October 21, 1981; Homburger and Dock, Trends in Traffic Patterns at the Bay Bridge and Caldecott Tunnel, U.S. Department of Transportation, DOT-BIP-WP-32-3-77, July 1977; telephone survey of 500 drivers conducted in April 1980 by Golden Gate Transit, data supplied by Alan Zahradnik, Transportation Planner, on February 16, 1983; Office of the Auditor-Controller, Comparative Record of Traffic for the Month of November, May 27, 1937 through November 30, 1982, Golden Gate Bridge, Highway and Transportation District; San Francisco Municipal Railway Planning Division, Projections of Future Muni Demand and Vehicle Requirements, October 1982; San Mateo County Transit District, SamTrans Five-Year Transportation Development Plan: 1983-1988, April 1983; California Department of Transportation, CalTrain Caltrans/Southern Pacific Peninsula Train Service Five-Year Plan 1983-1988, July 1983; and traffic volume counts from San Francisco Department of Public Works, Bureau of Engineering, Division of Traffic Engineering and from 1983 San Francisco Cordon Count, JHK and Associates, July 1983.

/16/ San Francisco Municipal Railway, Short-Range Transit Plan 1984-1989, June 1984.

/17/ Caltrans, September 1984, San Francisco Terminal Relocation Study; Caltrans, October 1984, Peninsula Commute Service San Francisco Terminal Relocation Engineering Cost Study.

/18/ I-280 Transfer Concept Program Final Environmental Impact Report (84.385E), certified May 23, 1985. Alternative VA includes the CalTrain extension to an underground station near the Transbay Transit Terminal.

/19/ Metropolitan Transportation Commission, September 28, 1984, Request for Proposal, Peninsula Mass Transit Study / Institutional Analysis.

/20/ Robert Halligan, Caltrans Public Affairs Officer, telephone conversation, January 2, 1985. The I-280 Transfer Concept Program EIR also analyzed an alternative involving an underground station under Rincon Annex (Alternative V). This alternative has been precluded by construction of the 201 Spear St. office building.

/21/ Downtown Plan EIR, Vol. 1, Table IV.E.4, p. IV.E.36, contains discussion of the implications of excess demand at the regional screenlines.

/22/ San Francisco Department of City Planning, 1980, Center City Circulation and Goods Movement, Working Papers 1, 2 and 3, and Final Report.

F. AIR QUALITY

SHORT-TERM CONSTRUCTION IMPACTS

Demolition, excavation, and construction of the project would generate particulate (TSP) emissions and probably would cause violations of the state 24-hour TSP standard (100 ug/m^3) in the immediate vicinity of the site, as do construction activities in general. TSP concentrations and the frequency of standard violations would depend on the soil composition, the types of machinery in use, the construction schedule, the proximity of other demolition and construction activities, and meteorological conditions. It is not possible to make accurate projections of TSP concentrations and frequencies of standard violations caused by demolition and construction activities.

Diesel-powered construction equipment would also generate emissions, primarily nitrogen oxides (NOx). Such emissions would contribute to total pollutant concentrations, but probably would not cause violations of their standards.

LONG-TERM OPERATION IMPACTS

Upon completion, the project would affect air quality in two ways. Emissions would be generated by project-related traffic, and by combustion of natural gas for building space and water heating. Transportation sources would account for over 95% of project-related emissions.

Table 9 shows projected daily emissions of air pollutants in 1990 from project-generated traffic, projected daily emissions in 1990 and 2000 for C-3 District development projected by the Downtown Plan EIR (EE81.3, certified October 18, 1984), and total emissions projected for the entire Bay Area by the 1982 Bay Area Air Quality Plan. The project would contribute about 2% to the total emissions generated by Downtown Plan development, in 2000./1/

TABLE 9: PROJECTED DAILY POLLUTANT EMISSIONS

	Emissions (tons per day) /a/				
		Downtown Plan/c/		Bay Area/d/	
Pollutant	Project 1990/b/	1990	2000	1990	2000
Hydrocarbons	0.010	0.6	0.6	428	428
Nitrogen Oxides	0.012	0.8	0.8	558	610
Carbon Monoxide	0.119	6.8	6.6	1,952	1,883
Particulates	0.018	1.1	1.3	562	649
Sulfur Oxides	0.002	0.1	0.1	194	233

/a/ Project and Downtown Plan emissions calculated using BAAQMD, vehicular emission factors. Emissions of HC, NOx, and CO include an assumed six minutes of idling time per vehicle trip. Emissions of TSP include dust disturbed from roadway surfaces.
/b/ Based upon a weighted daily average of 12.6 miles traveled.
/c/ Incremental emissions of C-3 District development, per the Downtown Plan EIR, Vol. 1, Table IV.I.2, p. IV.I.12.
/d/ Cumulative total emissions of Bay Area development, per ABAG, BAAQMD, MTC, 1982 Bay Area Air Quality Plan, pp. 42, 53 and 112.

SOURCE: Environmental Science Associates, Inc., and the Department of City Planning

Nitrogen oxides (NOx) and hydrocarbons (HC) are both chemical precursors of ozone. Motor vehicles emit more NOx than HC, and the emissions from building natural gas combustion would consist primarily of NOx. As demonstrated by the LIRAQ (Livermore Regional Air Quality model) regional ozone simulations

conducted for the 1982 Bay Area Air Quality Plan, an increase in the future NOx emissions compared to HC emissions would lead to a decrease in ozone compared to present levels. This model has also shown that Bay Area ozone concentrations are expected to be within the federal standard in 1987, and thereafter. As future NOx emissions from cumulative development in San Francisco would exceed future HC emissions, this development would not lead to an increase in total Bay Area ozone concentrations.

At the same time, total emissions of both NOx and HC are expected to decrease in San Francisco. Total NOx emissions would decrease in downtown San Francisco by about two percent from 1984 to 2000, but would increase in the Bay Area by about 5% from 1984 to 2000. It is possible that excess NOx emissions generated by cumulative development (including the project) could increase ozone and/or nitrogenous oxidant concentrations further downwind, outside the Bay Area. In addition, NOx emissions generated by cumulative development (including the project) throughout the Bay Area could increase acid rain further downwind, outside the Bay Area, though to a relatively small extent due to the magnitude of the increase and to dilution over time and distance.

In 1990 and 2000 (according to the Downtown Plan EIR), area-wide traffic volumes in the downtown area would increase by about 8% and 15%, respectively, over 1984 volumes; average traffic speeds would decrease by about one mph and two mph, respectively, from 1984 speeds. However, in 1990 and 2000 the average vehicle is expected to emit 32% and 43%, respectively, less carbon monoxide (CO) than in 1984 due to ongoing state and federal emissions controls.

CO concentrations at 11 representative intersections in the downtown study area, as analyzed in the Downtown Plan EIR, would decrease from 1984 to 1990 and, thereafter, to 2000. CO concentrations at 10 of the 11 intersections would be within the state and federal standards in 1990 and 2000 under the Downtown Plan. CO concentrations at one intersection (Brannan and Sixth Sts.) would continue to violate the state and federal eight-hour standards both in 1990 and 2000 under the Downtown Plan. This suggests that additional intersections not selected for analysis in the Downtown Plan EIR might also violate air quality standards.

Curbside CO concentrations at selected intersections that would be affected by project-generated traffic, and by cumulative development traffic were projected for conservative conditions, and are compared with ambient standards in Table 10. These projections were calculated using a revised version of the Modified Linear Rollback (MLR) method which was developed for the Downtown Plan EIR.

TABLE 10: EXISTING AND PROJECTED CURBSIDE CARBON MONOXIDE CONCENTRATIONS AT SELECTED INTERSECTIONS

Intersection	Averaging Time	Concentrations (ppm) /a/ 1984	1990 + Project	Downtown Plan/b/ 1990	2000
First & Harrison	1-hour	10.9	10.9	8.5	8.1
	8-hour	8.4	8.4	6.5	6.1
Fourth & Harrison	1-hour	15.0	15.0	11.4	10.7
	8-hour	11.6	11.6	8.8	8.3

/a/ Calculations for all scenarios were made using a revised version of the Modified Linear Rollback (MLR) method described in the Downtown Plan EIR. Background concentrations were calculated to be 7.4 ppm for one hour and 5.7 ppm for eight hours in 1984, 6.0 ppm for one hour and 4.5 ppm for eight hours in 1990, and 5.7 ppm for one hour and 4.1 ppm for eight hours in 2000. Underlined values are in violation of the state or federal CO standards. The one-hour state standard is 20 ppm, the one-hour federal standard is 35 ppm, and the eight-hour state and federal standards are 9 ppm.
/b/ Based on the growth forecast methodology contained in the Downtown Plan EIR, Volume 3, Table IV.I.3, p. C&R-I.8.

SOURCE: Environmental Science Associates, Inc.

Currently, the eight-hour CO standard is estimated to be violated at the Fourth/Harrison intersection. CO concentrations are predicted to be less in 1990 and 2000 than in 1984 and would not violate the standards at either intersection in either future scenario.

The California Legislature has mandated a biennial inspection and maintenance (I/M) program which applies to most cars and light trucks in California. This program went into operation in March 1984. Vehicles covered by the legislation must undergo a check consisting of a visual inspection of the vehicle's emission control system, measurement of tailpipe emissions while the

vehicle is idling and comparison of the measured emissions rates to the allowable limits for the appropriate year of manufacture and model of vehicle. Vehicles must have the required emission control equipment and must meet the specified standards for hydrocarbons and carbon monoxide. If required emissions control equipment is not present it must be installed. If all required equipment is in place but the vehicle's emissions exceed the standards, the owner must pay a maximum of $50 for service intended to result in compliance.

An annual I/M program was evaluated in the 1982 Bay Area Air Quality Plan based on the 1979 source inventory. Based on predicted reduction in hydrocarbons and CO of 25% in vehicles covered, a reduction in total motor vehicle-generated CO of about 18% would be expected. The reduction in total regional CO emissions would be about 16%. The reduction in motor vehicle-generated hydrocarbons would be about 17%; the reduction in total regional hydrocarbon emissions would be about 6%.

As CO concentrations in downtown San Francisco are almost entirely due to motor vehicles, future CO levels are predicted to be lower than they would be without an I/M program. Thus, actual concentrations are expected to be lower than CO concentrations shown in Table 10 and CO and HC emissions shown in Table 9, because the Downtown Plan EIR did not take the I/M Program into account.

Emissions of total suspended particulate (TSP) resulting from construction and from vehicle trips generated by the project and cumulative development would increase TSP concentrations, which could increase the frequency of TSP standard violations in San Francisco, with concomitant health effects and reduced visibility./2/

Emissions of sulfur oxides (SOx) generated by the project and cumulative development would not bring San Francisco's sulfur dioxide (SO_2) concentrations measurably closer to violating the standard.

The 1982 Bay Area Air Quality Plan contains strategies which consist primarily of HC and CO emission controls on stationary sources and motor vehicles, and transportation improvements, and are aimed at attaining the federal ozone and

CO standards. As discussed above, emissions associated with the project and with cumulative downtown development under the Downtown Plan are not projected by this EIR or the Downtown Plan EIR to increase ozone concentrations, and thus would not conflict with the objectives of the 1982 Bay Area Air Quality Plan regarding ozone. Cumulative downtown development is projected by the Downtown Plan EIR potentially to result in a violation of the eight-hour CO standard at the Brannan/Sixth intersection analyzed therein. The model used to make the CO projections might not be accurate to within the percentages of the excesses. The Downtown Plan EIR includes a mitigation measures requesting BAAQMD to install CO monitors downtown in order to validate the model. This winter, the City monitored CO and counted traffic at the Sixth and Brannan intersection. Once these data are analyzed, it should be possible to validate and recalibrate, if necessary, the model projections. Until then, a determination of whether cumulative downtown development would conflict with the objectives of the 1982 Bay Area Air Quality Plan regarding CO cannot be made.

NOTES - Air Quality

/1/ Impacts anticipated from cumulative downtown development have been analyzed in the Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984. The air quality setting and impacts discussion in the Downtown Plan EIR (Vol. 1, pp. IV.I.1-19; Vol. 2, pp. O.1-9; Vol. 3, Part 1, pp. C&R-I.1-11) is summarized in the text of this EIR and incorporated by reference herein.

/2/ State particulate standards were changed in 1983 to concentrate on fine particulate matter which has been demonstrated to have health implications when inhaled. Until the State adopts a method for monitoring fine particulate matter, it is not possible to determine what proportion of TSP in San Francisco would be subject to review against the new standards, whether new standards would be violated, or what the health implications would be.

G. ENERGY

Pacific Gas and Electric Company supplies energy to San Francisco customers. Electrical energy is generated from various sources of energy including oil, gas, hydroelectric, geothermal, nuclear, wind, cogeneration and solid waste./1/ In future years PG&E expects to generate electricity from these sources and from coal. The proportion of energy generated from oil and gas is expected to decrease by 1990 with corresponding increases in the proportion of energy generated from the other sources listed above./2/

Annual energy consumption by the existing use on the site, a parking garage, is negligible.

Removal of existing structures would require an unknown amount of energy. Fabrication and transportation of building materials, worker transportation, site development, and building construction would require about 295 billion Btu/3,4/ of gasoline, diesel fuel, natural gas, and electricity./5/ Distributed over the estimated 50-year life of the project, this would be about 6 billion Btu per year, or about 25% of annual building energy requirements.

New buildings in San Francisco are required to conform to energy conservation standards specified by Title 24 of the California Administrative Code. The State allows building developers to comply with the standards through the component performance standards method which requires the incorporation of a set of specific design features, through the use of nondepletable energy resources, or by demonstrating that the building would consume no more than a specified quantity of energy, expressed as Btu's per square foot per year (energy budget)./6/ Documentation showing compliance with these standards is submitted with the application for the building permit and is enforced by the Bureau of Building Inspection.

Table 11 shows the estimated operational energy which would be used by the project. Peak electricity demand for the commercial space would be about 700 kW and would occur at 5:00 p.m. in August. Project demand for electricity during PG&E's peak electrical load periods, July and August afternoons, would be about 700 kW, an estimated 0.004% of PG&E's peak load of 16,000 MW./7/ Annual and peak daily electricity consumption are shown in Figure 22, p. 116. Peak natural gas consumption would occur between 9:00 a.m. and 10:00 a.m. in January. Project demand for natural gas during PG&E's peak natural gas load period, January mornings, would be about 12 million Btu/day, or about 0.3% of PG&E's peak load of about 3.7 billion Btu per day./7/ Annual and peak daily natural gas consumption are shown in Figure 23, p. 117.

TABLE 11: ESTIMATED PROJECT ENERGY USE/a/

Allowable Under Title 24 Energy Budget		
Total annual Btu/b/ per square foot of office space		126,000
Total annual Btu per square foot of retail space		200,000
Daily Natural Gas Consumption/c/		
Estimated daily natural gas consumption per square foot		20 Btu
Estimated peak daily natural gas consumption		110 Therms
Monthly Electricity Consumption/c/		
Estimated monthly electrical consumption per square foot	0.8 kWh	(8,200 Btu)/d/
Estimated total monthly electrical consumption	180,000 kWh	(1.8×10^9 Btu)
Annual Consumption		
Estimated total annual natural gas consumption	15,200 Therms	
Estimated total annual electrical consumption	2.1×10^6 kWh (21×10^9 Btu)	
Connected kilowatt load	1,900 kilowatts	
Estimated total annual energy consumption	23.7×10^9 Btu (4,100 barrels of oil)	

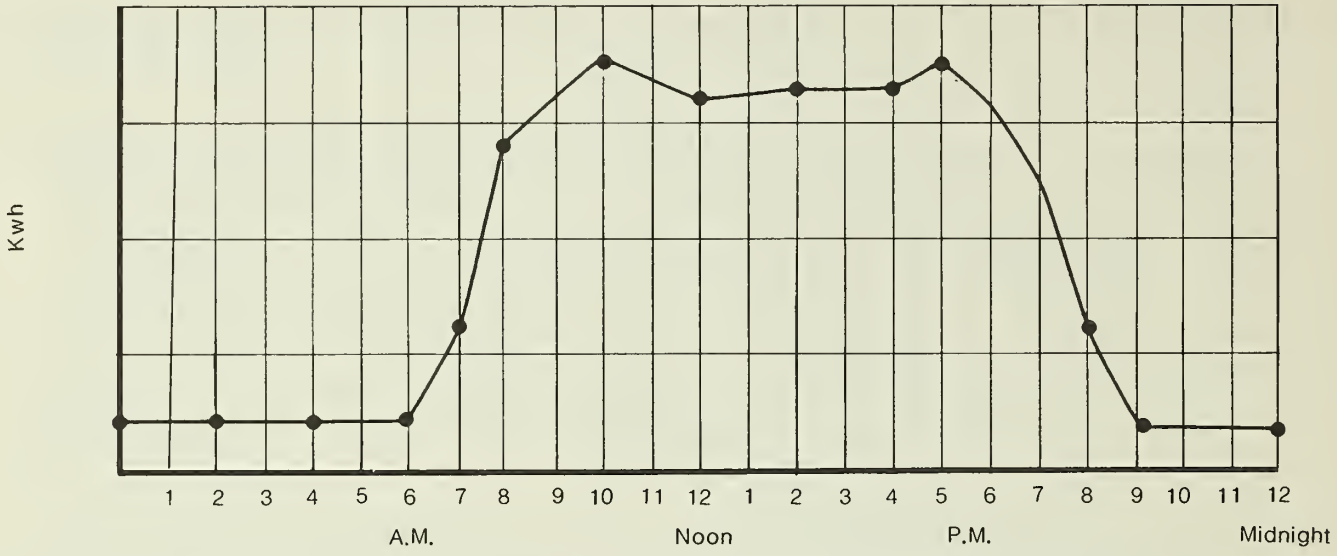
/a/ The project would include 220,815 net sq. ft. of office and 9,200 net sq. ft. of retail area. Energy use includes space conditioning, service water heating and lighting in accordance with allowable limits under Title 24. Estimated electricity includes an additional one kWh/sq. ft./yr. consumed by appliances such as typewriters, computers, coffeemakers, etc., than assumed by Title 24 estimates.

/b/ Btu (British thermal unit): A standard unit for measuring heat. Technically, it is the quantity of heat required to raise the temperature of one pound of water 1° Fahrenheit (251.97 calories) at sea level.

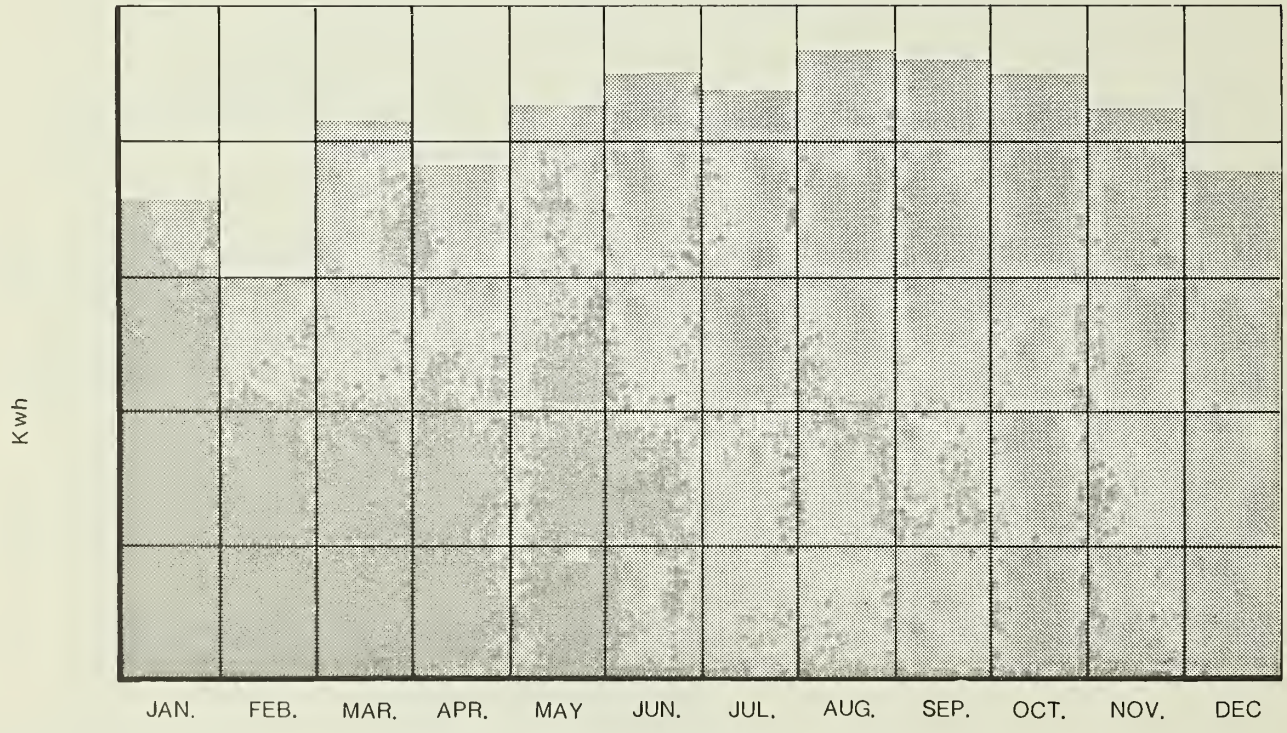
/c/ These calculations are available for review at the Office of Environmental Review, 450 McAllister St.

/d/ Energy Conversion Factors:
one gallon gasoline = 125,000 Btu
one kilowatt (kw) = 10,239 Btu assuming operational efficiency of 33%
one therm = 100,000 Btu
one cu. ft. of natural gas = 1,100 Btu at source
one barrel of oil = 5,600,000 Btu

SOURCE: Glumac Associates Inc., Environmental Science Associates, Inc. and DCP.



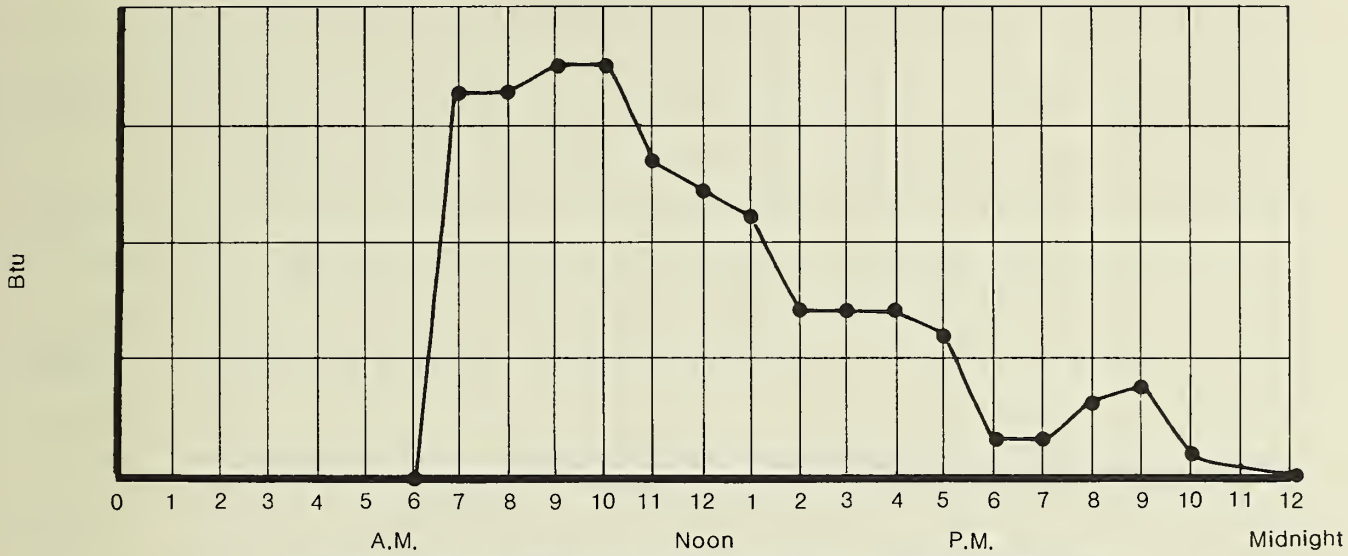
Peak Day (August) Electrical Load Distribution



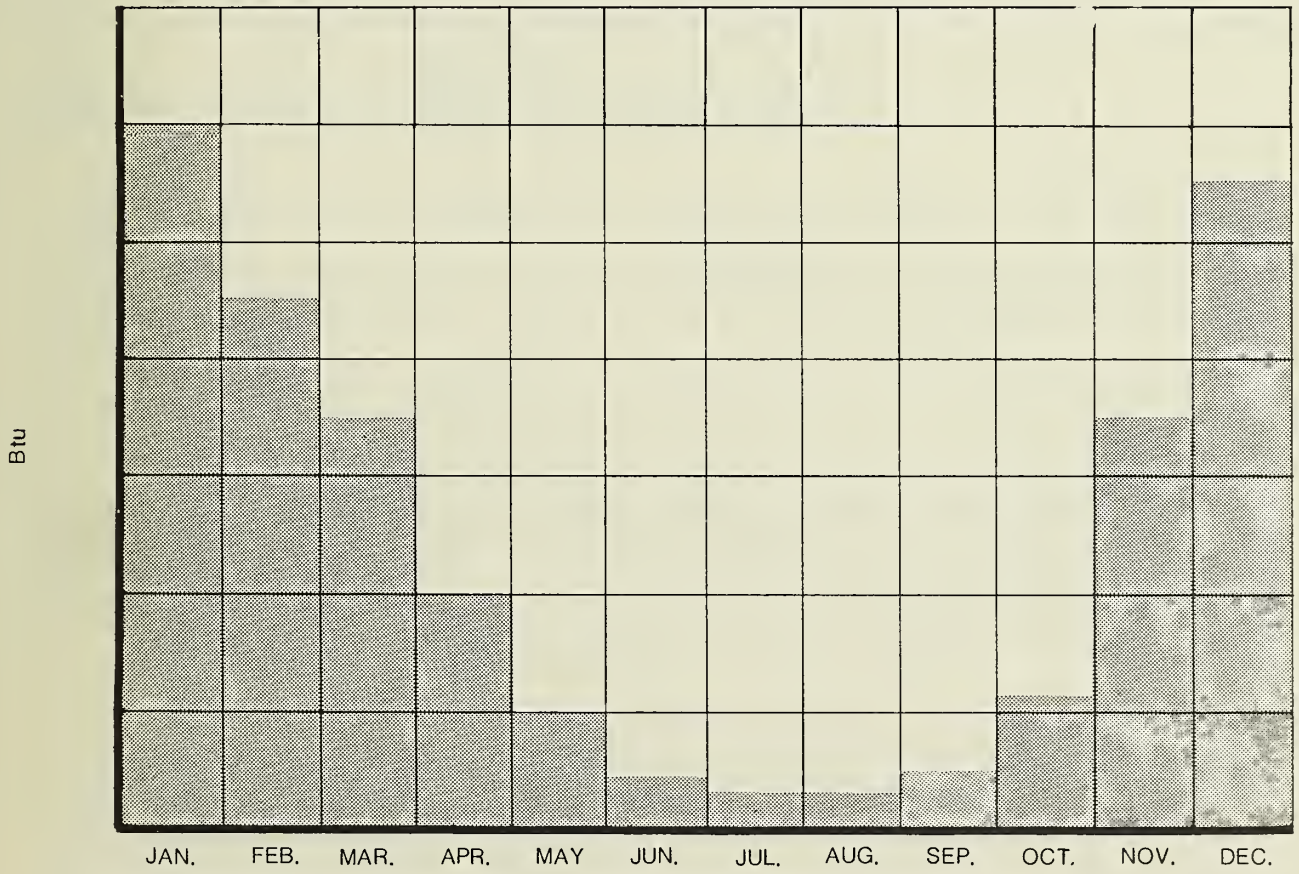
Annual Electricity Consumption

SOURCE: GLUMAC ASSOCIATES INC. and ESA

FIGURE 22
524 HOWARD
PROJECTED ELECTRICAL
DISTRIBUTION CURVES



Peak Day (January) Natural Gas Load Distribution



Annual Natural Gas Consumption

FIGURE 23
524 HOWARD
PROJECTED NATURAL
GAS DISTRIBUTION CURVES

SOURCE: GLUMAC ASSOCIATES INC. and ESA

Project-related transportation would cause additional, off-site energy consumption. For the project trip generation described in the Transportation section, pp. 79-108, project-related trips would require gasoline, diesel fuel and electricity annually as indicated in Table 12. These figures were calculated based on data contained in the Downtown Plan EIR. The total annual transportation energy demand, converted with at-source factors to a common thermal energy unit, would be about 25.1×10^9 Btu, the energy equivalent of about 4,480 barrels of oil. This projected use is based on the mix of highway vehicles in California in 1987. Vehicle fuel use is expected to decrease as the vehicle fleet becomes more efficient and fuel more expensive.

TABLE 12: PROJECT RELATED ANNUAL TRANSPORTATION ENERGY CONSUMPTION/a/

	Electricity (Kilowatt hours)	Gasoline (Millions) of Gallons)	Diesel (Gallons)	Total Btu (Billions)
Auto/Taxi/Jitney/ Motorcycle		96,680		13.6
BART	690,830			7.1
Muni Electric	102,299			0.1
Regional Bus Systems			17,286	2.8
SPRR			3,568	0.6
PROJECT TOTAL	793,129	96,680	20,854	25.1

/a/ The methods used to calculate these figures are described in detail in the Downtown Plan EIR, EE81.3, certified October 18, 1984, Vol. 2, Appendix N and the associated data is contained in Table No. 6. Calculations are also based on vehicle miles traveled, available for review at the Office of Environmental Review, Department of City Planning, 450 McAllister St., San Francisco, California.

SOURCE: Environmental Science Associates, Inc.

In the Energy Policy Component of the Environmental Protection Element of the Comprehensive Plan, Policy 4 under Objective 2 states that development should "encourage use of energy conserving appliances and lighting systems." To respond to Policy 4 of this objective, the project sponsor would install appliances complying with State Efficiency Regulations (Title 20, Chapter 2, California Administrative Code). The project also would address Policy 1 under Objective 4, to "increase the use of transportation alternatives to the

automobile." The sponsor has agreed to designate a transportation broker for the project to encourage transit use by project workers and residents. The project would not address Policy 3 of Objective 5, as it would not connect to a district heating system nor would it include cogeneration. However, the project is one of three San Francisco high-rise buildings being considered in a cogeneration feasibility study by an advisory committee consisting of representatives from PG&E, EPRI, Gas Research, the Lawrence Berkeley Labs and the San Francisco Department of City Planning.

Projections of electrical use for growth that would occur under the Downtown Plan EIR indicate an increase of about 330 to 350 million kWh of electricity per year between 1984 and 2000 as a result of all new development occurring in the C-3 District./8,9/ Projections of gas consumption for the same period and location indicate an increase of about 470 million cu. ft. (about five million therms) per year, of which 210 million cu. ft. (about two million therms) per year, would be for office uses./8/

PG&E, in examining its ten-year load growth projections for San Francisco, believes that growth rates of net new office space in the downtown will diminish from the historic figure of 1.5 million sq. ft. per year to between 1 million and 1.2 million sq. ft. per year./10/ Total increased energy demand over the next decade would be approximately 200 million kWh of electricity per year. The PG&E projection cannot be compared to the projections in the Downtown Plan EIR because they cover different time periods and different economic forecasts./11/

PG&E plans to meet increased San Francisco energy demands to the year 2000 are discussed on pp. IV.G.13-14 of the Downtown Plan EIR, which are hereby incorporated by reference. In summary, that material indicates the demand increases in electricity would be met from nuclear sources, oil and gas facilities, hydroelectric and geothermal facilities, and other sources such as cogeneration, wind and imports. PG&E plans to continue receiving most of its natural gas from Canada and Texas under long-term contracts.

NOTES - Energy

/1/ PG&E Annual Report, San Francisco, CA, 1982.

/2/ PG&E Annual Report, San Francisco, CA, 1981.

/3/ At-source thermal energy, given in British thermal units (Btu), is based on information received from PG&E, Technical Service Department, May 10, 1984.

/4/ The British thermal unit (Btu) is the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at sea level. The term "at-source" means that adjustments have been made in the calculation of the thermal energy equivalent (Btu) for losses in energy that occur during generation, transmission, and distribution of the various energy forms as specified in: ERCDC, 1977, Energy Conservation Design Manual for New Non-Residential Buildings, Energy Conservation and Development Commission, Sacramento, California, and Apostolos, J. A., W. R. Shoemaker, and E. C. Shirley, 1978, Energy and Transportation Systems, California Department of Transportation, Sacramento, California, Project #20-7, Task 8.

/5/ Hannon, B. et al., 1978, "Energy and Labor in the Construction Sector," Science 202:837-8470.

/6/ State of California Energy Resources Conservation and Development Commission, Conservation Division, Energy Conservation Design Manual for New Nonresidential Buildings, 1984.

/7/ San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984, Vol. 1., p. IV.G.3.

/8/ Downtown Plan EIR, Volume 1, pp. IV.G.1-IV.G.17. Energy consumption factors of 18 kWh sq. ft./year and 11 cu. ft./year (about 12,100 Btu) are based on unpublished data of actual building consumption rates in the Downtown Plan EIR file at the Department of City Planning, 450 McAllister St., San Francisco, and include base power consumption of the building core (uses covered by Title 24) and power demands of electric office machines (uses not covered by Title 24).

/9/ The Downtown Plan EIR uses a consumption rate factor of 18 kWh/sq. ft./year from 1984-1990 and 16 kWh/sq. ft./year from 1990-2000. These different factors are due to Title 24 revisions to reduce building energy budgets. These new standards would be reflected by lower electrical consumption in buildings constructed after 1990.

/10/ Ken Austin, Commercial-Industrial Marketing Supervisor, Pacific Gas and Electric Company, letter of March 23, 1984. This letter is available for public review at the Department of City Planning, Office of Environmental Review, 450 McAllister St., San Francisco.

/11/ PG&E's analysis of a typical office building yielded an annual consumption of about 17 kWh per sq. ft. per year which agrees with the City's estimate within the limits of estimation methodology.

H. CONSTRUCTION NOISE

Ambient noise in the project vicinity is typical of noise levels in downtown San Francisco, which are dominated by vehicular traffic, including trucks, cars, Muni buses and emergency vehicles. Sidewalk noise measurements taken during the weekday p.m. peak commute time show average noise levels of about 76 Leq dBA on Howard and Natoma Sts./1,2/ The Downtown Plan EIR indicates ambient noise levels of about 75 dBa along Howard St./3/

Project construction would take place over 19 months, and would increase noise levels in surrounding areas. Construction noise levels would fluctuate depending on construction phase, equipment type and duration of use, distance between noise source and listener, and presence or absence of barriers between noise source and listener. To estimate probable noise impacts, this analysis assumes typical equipment and construction techniques. Table 13 shows typical exterior noise levels associated with the different phases of construction (see Appendix E, p. A-35, for a table of typical noise levels found in the everyday environment). Interior noise levels at 50 ft. from the noise source would be about 10 to 15 dBA less than those shown in Table 13. Closed windows would reduce noise levels by about 20 to 25 dBA below those shown in the table.

TABLE 13: TYPICAL COMMERCIAL/INDUSTRIAL CONSTRUCTION NOISE LEVELS AT 50 FEET FROM THE SOURCE

Construction Phase	Duration of Phase* (weeks)	Average Noise Level (dBA)
Ground Clearing	8	84
Excavation	12	89
Foundations**	12	78
Erection	21	85
Exterior Finishing	25	89

* Phases of construction would overlap.
** Time includes seven weeks of pile driving; noise level is for construction activities other than pile driving.

SOURCE: Bolt, Beranek and Newman, December 31, 1971, Noise from Construction Equipment and Home Appliances, US Environmental Protection Agency

Construction noise is regulated by the San Francisco Noise Ordinance (Article 29 of the City Police Code). The ordinance requires that sound levels of construction equipment other than impact tools not exceed 80 dBA at a distance of 100 ft. from the source. Impact tools (jackhammers, pile drivers, impact wrenches) must have both intake and exhaust muffled to the satisfaction of the Director of Public Works. Section 2908 of the Ordinance prohibits construction work at night, from 8:00 p.m. to 7:00 a.m., if noise would exceed the ambient noise level by five dBA at the project property line, unless a special permit is authorized by the Director of Public Works.

Project construction would occur in several stages: demolition and clearance, excavation, foundation preparation, frame erection, and exterior finishing. Throughout the construction period there would be truck traffic to and from the site, initially hauling away debris and dirt and then delivering building materials.

The project would require pile driving. Conventional unmuffled and unshielded pile drivers emit noise levels of 100 to 110 dBA at a distance of 100 ft. each time the driver strikes the pile. The Department of Public Works allows piledriver operation under certain conditions, which may include specifying relatively quiet equipment, predrilling pile holes, and/or specifying hours of operation to reduce the number of people exposed. Pile driving would occur intermittently over about seven weeks; hammering would occur during a five- to eight-minute period per pile. Noise levels, when the pile is struck, could reach 105 dBA at 50 ft.

During excavation and exterior finishing, noise levels in buildings adjacent to the site could reach as high as 74 dBA (the windows are not operable), and during pile driving, noise levels could reach as high as 90 dBA. In the buildings across Howard St. which have operable windows, noise levels could reach as high as 95 dBA with the windows open and 85 dBA with the windows closed during pile driving.

Vibrations from the impact during pile driving would be felt in adjacent and nearby buildings. These vibrations have been found to be more disturbing to some people than the high noise levels. General stress reaction has been observed in humans exposed to brief sounds of 76 dBA./4/ Noise at levels

greater than 70 dBA would require workers to close the windows or shout to communicate. Intermittent noises, such as pile driving noise, reduce the perception of control over the environment. This loss of control frequently results in a depressed mood and depressed motivation./5/ Repeated impulse and intermittent sounds of high level appear more likely to disrupt performance, than continuous or steady sounds of comparable level./6/

Two additional projects, 535 Mission St. and 100 First St., are planned in the project area. Should these projects' construction schedules coincide with that of the proposed project, noise levels would be expected to increase by two to five dBA. This would generally be audible (depending on the loudness of the activity) and would probably be annoying, since noise from construction of one project would be annoying to the nearest receptors (those within 100 ft.). Should one project be completed and a second begin soon after, noise impacts would be prolonged.

In summary, during the majority of construction activities, noise levels would be expected to be at or above existing levels in the area. There would be times, particularly during the operation of piledrivers or impact wrenches, when noise would interfere with indoor activities in nearby offices and retail stores.

NOTES - Construction Noise

/1/ Noise measurements were taken on Thursday, February 7, 1984 at 4:00 p.m. and 5:00 p.m. by ESA staff. Measurement locations were Howard and Natoma Sts.

/2/ A decibel (db) is a logarithmic unit of sound energy intensity. Sound waves, traveling outward from a source, exert a force known as sound pressure level (commonly called "sound level"), measured in decibels. A dBA is a decibel corrected for the variation in frequency response of the typical human ear at commonly encountered noise levels. Leq is the equivalent steady-state sound level which in a stated period of time would contain the same acoustic energy as the time-varying sound level during the same time period. Lmax is the maximum noise intensity reached during the period of time of the measurement.

/3/ San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984, Volume 1, pp. IV.J.1-9, particularly Table IV.J.2, pp. IV.J. 9-10.

/4/ The Central Institute for the Deaf, Effects of Noise on People, U.S. EPA, 1971.

/5/ Sheldon Cohen, et al., "Cardiovascular and Behavioral Effects of Community Noise," American Scientist, Volume 69, October 1981.

/6/ National Institute for Occupational Safety and Health, Occupational Exposure to Noise, U.S. Department of Health, Education and Welfare, 1972.

I. EMPLOYMENT AND HOUSING

EMPLOYMENT

The project would accommodate the growth of office and retail employment in the C-3 District. Although, at this time, no tenants have been secured, it is expected that office businesses providing management, technical, and professional services would occupy most of the space. Over time, the project is expected to be characteristic of all C-3 District office buildings occupied by a mix of corporate and business service firms. Therefore, average overall density factors for the C-3 District (gross sq. ft. of space per employee) are used to estimate the employment characteristics of the project, as opposed to using any particular tenants which may or may not remain in the building over the long term.

The mix of tenants and the employment characteristics of the businesses in the existing space on the project site are described in the Employment Setting. Demolition of existing space for construction of the new project would result in the displacement from this site of the parking operator's employee.

In total, there would be about 870 workers at the project site, consisting of 820 office workers, 30 retail workers, and 20 building maintenance/security workers. The additional space represented by the project would accommodate about 870 additional employees in the C-3 District. All employment would represent a net increase. This estimate is presented in Table 14./1/

Total permanent employment in the C-3 District is forecast to be about 372,000 in 2000 under the Downtown Plan. This forecast represents an increase of about 91,200 C-3 District workers between 1984 and 2000. Total employment in the project would represent 0.2% of total C-3 District employment in 2000 and about 1.0% of the forecast growth in permanent employment.

Construction of the new project would require about 225 person-years of construction labor. Construction labor for the project would represent about 0.3% of the total person-years of construction labor forecast for the C-3 District from 1984 through 2000.

TABLE 14: ESTIMATES OF PROJECT EMPLOYMENT

Use	Total Project		
	Building Space/a/	Space Per Employee/b/	Estimated Employment
Office	220,815	268 /c/	824
Retail	9,200	350	26
Subtotal	230,015		850
Building Maintenance/ Security		12,500	18
TOTAL EMPLOYMENT			868

/a/ Space estimated from Table 1, Project Description.
/b/ Gross sq. ft. of building space per employee. C-3 District employment density factors from Downtown Plan EIR. (See Note /1/.)
/c/ Density for all office activities in 2000, including both management/technical office and trade/customer service office, and incorporating an average 5% vacancy factor.

SOURCE: Environmental Science Associates, Inc.

The forecast of cumulative C-3 District employment to the year 2000 (of which the proposed project employment is a part) consists of both "basic" economic growth (activities supported by sales to buyers outside the area) as well as the part of the "multiplier" of this growth that occurs in the C-3 District. The multiplier is the economic growth that results from business purchases and the spending of employees and employee households. The project could include both businesses that generated additional C-3 District economic activity and businesses that were part of the multiplier effect of other C-3 District activities.

An example of these economic relationships relevant to the C-3 District is a corporate headquarters ("basic" employment) purchasing supplies as well as outside legal, accounting, banking, and delivery services from other businesses. Employment in these other businesses is part of the multiplier of

"basic" C-3 District activity, and, if the businesses are located in the C-3 District, then their employment is included in the C-3 District forecasts. In addition, employee spending for lunches, other eating and drinking, and for retail purchases in the C-3 District are part of the multiplier. The employment supported by this spending in the C-3 District is also included in the forecasts. In addition to the part of the multiplier effects that occurs in the C-3 District, there would be other economic activity generated by business and employee household spending elsewhere in the City and the rest of the region.

HOUSING

Project-Generated Housing Demand and Housing Policy

To the extent that the project would attract employees from outside the City and contribute to the formation of additional households by existing City residents, it would also contribute to increased housing demand in San Francisco. Not all of the project's net new employees would seek housing in the City. Some new employees would choose to live outside of the City and others may currently live outside of the City and not necessarily change their residence location as a result of a new job location.

San Francisco's Office Affordable Housing Production Program (OAHPP) requires housing to be provided to offset the demand created by office development, for all projects including more than 50,000 gross sq. ft. of office space. On July 8, 1985, the Board of Supervisors approved the Office Affordable Housing Production Program, Ordinance No. 358-85, which estimates that a demand for 0.386 housing units is created for each 1,000 gross sq. ft. of office space built. Based on this formula, the requirement for this project would be the payment of $1,179,152 or the development of 85 housing units, at least 50% of which must be affordable to households of low or moderate income for 20 years.

Housing Affordability

Pursuant to the California Environmental Quality Act (CEQA) Guidelines, Section 15150(a), discussion of housing affordability for new office workers is incorporated by reference from the Second Street Square Final EIR, 82.591E,

certified January 12, 1984 (pp. 53-55). Briefly, while a survey of occupants of a building comparable to the project would yield some housing affordability data, accurate indentification of housing affordability characteristics of persons entering the San Francisco housing market as a result of a new office project is virtually impossible. The problems with making such a determination include: 1) the identity and financial resources of persons employed in the newly constructed space cannot be known prior to occupation of the project; 2) persons working in the newly constructed space (in old or newly created jobs) may not be newly employed in San Francisco; and 3) persons newly employed in San Francisco in newly created jobs may not have obtained their jobs as a result of new office development. Even if the number of new employees and their preferences for housing were known, a household's ability to pay for housing depends on a variety of factors in addition to individual income, such as family composition and housing preferences./2/

Future Residence Patterns For San Francisco

Employment growth and building development in downtown San Francisco will result in more employees working and living in the City. Over time, more existing residents will take San Francisco jobs and others who take San Francisco jobs will move into the City.

The future residence patterns described below are quantified and provide the basis for the qualitative conclusions about the housing market implications of downtown growth described in the following subsection. Because the residence patterns can be quantified for both cumulative development and for the increment of growth represented by the project, this allows an estimate of the project's contribution to the impacts of cumulative growth.

Downtown Plan Forecast as Cumulative Context

Forecasts of residence patterns in the year 2000 were prepared for the Downtown Plan EIR./3/ These forecasts incorporate future housing, labor force, and employment patterns in San Francisco and throughout the region and consider changing demographic, housing market, and transportation factors.

Growth expected throughout the region was included in the Downtown Plan EIR analysis of the housing impacts of C-3 District growth. The approach was to use ABAG's regional employment forecasts to describe the growth that is expected to occur by the year 2000. These forecasts incorporate the plans and projects that are expected to be completed by 2000 as well as land use policies from all Bay Area communities. They also include future employment in projects as yet not conceived or proposed. Further, they account for the net result of decreases in employment as firms go out of business or cut back on operations and increases in employment accommodated by new development. They also account for changes in the use of existing space./4/

This approach provides a comulative employment context that is consistent with forecasts of expected future housing and labor force throughout the region. To assess housing impacts, it is important that expected growth of employment be analyzed within the context of expected growth of the housing supply and of the region's workforce for consistent time periods. The Downtown Plan forecast approach to cumulative impact assessment recognizes that growth besides that in the C-3 District (employment growth in greater downtown San Francisco, the rest of the City and the region) will also be competing for labor and housing in San Francisco and the rest of the region.

According to the Downtown Plan EIR forecasts, approximately 189,000 C-3 District workers would be living in San Francisco in 2000. This represents an increase of 30,000 City residents employed in the C-3 District over the 159,000 estimated for 1984, a 19% increase./5/ Relatively more employed San Franciscans would be employed in the C-3 District; the percentage of all employed San Franciscans who hold C-3 District jobs would increase from 45% in 1984 to 47.5% in 2000. Relatively fewer C-3 District jobs would be held by San Franciscans. The percentage of all C-3 District jobs held by San Franciscans would decline from 55.5% in 1984 to 50.2% in 2000. These changes would be the result of cumulative development and employment growth in the C-3 District between 1984 and 2000.

It is important to understand the difference between the two percentages above. In each case, the same estimate of the number of jobs held by San Francisco residents is copared to an estimate for a larger group: to all employed residents of the City in the first instance and to all C-3 District

employment in the second. These percentages both describe the same employment situation, but from different perspectives. The percentage of jobs held by City residents is used more often, primarily for transportation analysis. The percentage of City residents who work in downtown San Francisco is used less often. This latter perspective is a more direct measure of the role of downtown jobs in employing San Francisco residents.

The residence patterns of future occupants of the proposed project can be estimated using information developed in the Downtown Plan EIR analysis. This approach assumes that employment densities for the building and residence patterns for those working in the building would reflect the average conditions for all similar buildings and occupants in the C-3 District in 2000. According to this approach, there would be about 400 out of 870 people employed in the project who would live in San Francisco. The project would account for about 0.2% of the 189,000 San Franciscans employed in the C-3 District in 2000 under the Downtown Plan EIR forecast./6/

Housing Market Implications in San Francisco/7/

There is a complicated series of interactions between employment growth and the housing market impacts of that growth. Throughout this process, adaptations or changes in conditions can be identified, but cannot be solely attributed to employment growth.

With continued employment growth there would be additional demand for San Francisco housing from people with strong preferences for living in the City and with the ability and willingness to pay for housing. This demand would be added to an otherwise competitive market with relatively high prices/rents.

At the same time, additional housing will be produced in San Francisco. There would be more additional supply relative to additional demand in the future than in the past. The primary reason is that housing market factors together with local policies and redevelopment programs are expected to support a larger addition of housing in the City than occurred in the past two decades. Nevertheless, San Francisco is unlikely to accommodate all of the households that would otherwise choose to live in the City. This is explained by the City's role as the employment center for a large region, by the limited land

availability in the City, and by the higher costs of producing housing in San Francisco.

Downtown employment and employment growth will continue to be among the factors supporting a competitive housing market. It is unlikely that changes in housing demand due to downtown growth alone would be the cause of significant changes in prices and rents. Future housing prices and rents will depend on other factors besides downtown employment growth (such as interest rates and local land use policies and development costs throughout the region).

Not all of the additional downtown workers would live in San Francisco, however, some would choose to do so. Many of the additional workers would be willing to pay higher prices for City housing to save on the time and cost of commuting from a more outlying location. Many of the additional workers preferring to live in San Francisco would be able to pay more for housing than some current residents.

Those workers who choose to live in the City would compete for the existing supply of housing. Those with greater financial resources would support the production of housing by the private market. Those with less financial resources would add to the competition for the stock of housing available at prices and rents below those needed for new construction. To the extent that prices/rents remain below this threshold, the supply of these types of units would not be expanded. Instead, prices/rents of existing units would be somewhat higher, occupancies would be higher (more people per unit because children live at home longer, more people live together, etc., and/or lower vacancies), and there would be pressures to upgrade the existing stock.

Competitive market pressures would be greatest for rental and for-sale housing priced below average, particularly for units below the threshold prices/rents for new housing production. Increased competition in an already competitive market, the relatively high threshold for new construction, and the large pool of consumers (not just downtown workers) with preferences for the older housing stock in San Francisco, all would result in more housing consumers seeking these types of units. The purchase and upgrading of lower-cost older housing is the first step in the process of neighborhood change known as

gentrification. Often, existing lower-income residents can be "priced out" of their housing in the upgrading process.

Higher prices and rents, particularly for the relatively lower-cost housing in older neighborhoods, would have various implications over time, for those in the housing market as well as for other existing residents. Some people would decide not to move into the City and some existing residents would move out of the City for more acceptable housing elsewhere. Many individuals would continue to live in San Francisco and pay higher prices/rents for the same City housing. Still others, those unable or unwilling to pay more, woul accept City housing which does not fully meet their preferences or needs. Those with the fewest resources to pay for housing (low and some moderate income households) would bear the greatest share of the negative impacts of a housing market with higher prices/rents. These impacts vary - household could move to less satisfactory housing in the City or elsewhere, or more household members could have to contribute to housing expenditures (either within the existing household or because people decide to live together to combine their incomes). It is more likely that the poor will continue to live in the City, although in more crowded or otherwise inadequate housing, than move outside the City. And finally, owners of existing units would benefit to the extent that their housing appreciates. It is not possible to quantify how may households would be affected in each of these ways.

This scenario of future housing market conditions in San Francisco implies that housing affordability will continue to be a problem for many of the City's households. The additional demand due to downtown employment growth would add to a future housing market situation in which many households, particularly those with incomes below the threshold needed to support new production, are expected to be paying a larger percentage of their incomes for housing or accepting less housing services than in the past.

Generally, those households with fewer financial resources available to pay for housing would make the most sacrifices in adapting to more competitive market conditions. They have less ability to compete for housing and fewer housing options. San Francisco currently has and will continue to attract a large number of persons that will be faced with these difficulties in securing housing. They include renters, younger persons, those holding entry level

jobs, the elderly and others on fixed incomes, newly arrived immigrants, as well as other poor and unemployed persons.

The proposed project, as part of the future pattern of downtown office development, would contribute to these housing market impacts. The project's individual contribution cannot be separately identified.

Regional Perspective on Residence Patterns and Housing

The residence patterns of San Francisco workers can also be considered from a regional perspective. In fact, future labor force, housing and employment throughout the region were important factors in the Downtown Plan EIR residence patterns forecasts. Expected trends in labor force participation, workers per household, housing production, and employment growth provided the future regional context in which the Downtown Plan EIR forecasts were prepared.

Table 15 presents residence patterns forecasts for C-3 District workers as prepared for the Downtown Plan EIR and compares these forecasts to forecasts of the total employed population in each part of the region prepared by the Association of Bay Area Governments (ABAG)./4/

The Downtown Plan EIR 1984 estimates and forecasts for 2000 (first three columns on the left) indicate that the largest number of C-3 District workers would live in San Francisco, followed by the East Bay, the Peninsula, and the North Bay. The largest increase of C-3 District workers would be for those living in the East Bay, followed by San Francisco, the Peninsula and the North Bay. The percentages to the right compare the residence patterns forecast for C-3 District workers to ABAG's forecasts of total employed residents throughout the region. C-3 District workers would represent a relatively large share of all employed San Franciscans and relatively smaller proportions of the labor force in other Bay Area counties. Comparing 1984 and 2000, there would not be major changes in the C-3 District percentages of the labor force in each area.

Because regional housing supply assumptions, as well as labor force and employment trends, are the basis for the forecasts, the above observation that the changes over time in the downtown worker percentages of the region's

TABLE 15: C-3 DISTRICT WORKERS BY AREA OF RESIDENCE COMPARED TO EMPLOYED POPULATION IN EACH AREA, 1984 AND 2000

	Number of C-3 District Workers*			Employed Population**			Percent of Total Employed Population in Each Part of Region		
	Total 1984	Total 2000	Change 1984-2000	1984	2000	Change 1984-2000	Total 1984	Total 2000	Change 1984-2000
San Francisco	159,000	189,000	30,000	355,000	404,000	49,000	45 %	47 %	56 %
East Bay	73,000	110,000	37,000	1,032,000	1,407,000	375,000	7	8	9
Peninsula	35,000	48,000	13,000	1,040,000	1,326,000	286,000	4	4	4
North Bay	19,000	29,000	10,000	269,000	393,000	124,000	7	7	7
TOTAL	286,000 ***	376,000 ***	90,000	2,696,000	3,530,000	834,000	11 %	11 %	10 %

NOTE: Table IV.D.20 in the Downtown Plan EIR (p. IV.D.81h) presents a similar comparison showing the detail for the nine Bay Area counties. That table also shows two forecasts of the total employed population for the region: the ABAG forecast (presented above) and the EIR scenario (developed specifically for the Downtown Plan EIR analysis, before the ABAG forecast was available). Table IV.D.20 demonstrates that the conclusions regarding C-3 District workers as a share of the employed population in various parts of the region are the same, no matter which set of regional forecasts is used.

* Includes permanent employment and annual average construction employment. Incorporates changes in employment for office, retail, hotel and other uses.
** Forecasts of employed residents in Bay Area counties from ABAG, Projections '83. ABAG presents forecasts of employed residents for 1985 and 2000. For comparability with the C-3 District forecasts (which use 1984 as the base year), ABAG's projections were prorated over the five-year period (1980-1985) to estimate 1984 conditions for the region.
*** The C-3 District forecast includes some workers who would live outside the Bay Area. This is a small number and is not shown here.

SOURCE: Recht Hausrath & Associates

employed population in each area would not be large indicates that downtown workers would not require much larger shares of the region's housing in the future than they do now. In other words, a housing stock consistent with local policies could accommodate both future downtown workers and future workers elsewhere in the region.

As part of total regional employment growth in the future, increases in downtown employment can be viewed as contributing to regional housing demand. A strong regional economy has and will continue to be a factor supporting a competitive regional housing market with relatively high housing prices and rents. By itself, downtown growth would make only a small difference in the region's housing market outside of San Francisco. If downtown growth did not occur and all other employment growth and housing market factors remained as forecast, it is unlikely that the Bay Area's future housing market would be very different from what would otherwise occur with downtown growth.

All other things being equal, regional employment growth would mean higher prices and rents for housing than would otherwise be the case in the future. It would also mean lower housing services (less acceptable housing conditions at the same, or higher, price) for some of the region's households. How much difference (higher prices/rents or lower services) depends on other housing market factors besides employment growth (interest rates, land use policies, other demand factors, etc.). It also depends on the amount of employment growth. Downtown employment growth alone would have less impact than total regional growth.

The housing market impacts of employment growth are not uniform throughout the region. Generally, there would be more effects in nearby communities than in those further from the location of job growth. The main reason is that, all other things being equal, households have a preference for residential locations closer to places of work and can pay more for housing at a closer location because they are not paying the higher transportation costs they would otherwise pay at a more distant place.

NOTES - Employment and Housing

/1/ Employment in the project is calculated from the estimates of space by use in the project using employment density factors (gross sq. ft. of space per employee). The employment density factors are those developed in the analysis

for the Downtown Plan Environmental Impact Report (EIR) EE81.3, certified October 18, 1984. (See Downtown Plan EIR, Vol. 1, Table IV.C.2, p. IV.C.6 and Table H.3, pp. H.21-H.22.) The office employment density factor used here (268 gross sq. ft. per employee) is for total C-3 District office in the year 2000, including both management/technical office and trade/customer service office business activities. It is different from the density factor of 255 gross sq. ft. of occupied space per employee described in the Downtown Plan EIR (Vol. 1, see p. IV.C.45), however, because it incorporates an average office vacancy rate of 5%. (See Downtown Plan EIR, Vol. 1, note 7, pp. IV.C.55-IV.C.56). This density factor (as well as the other for occupied space) is consistent with the Downtown Plan EIR forecasts of employment and space which incorporate an average office vacancy rate of 5%.

The year 2000 density factors are used so the project can be set in the context of cumulative C-3 District development to 2000. Under the Downtown Plan, office employment densities are expected to increase over time as businesses take steps to use space more efficiently when faced with higher rents. This is reflected in the office employment density used in this EIR. (See Downtown Plan EIR, Vol. 1, pp. IV.C.45 and notes 28, 29 and 30, pp. IV.C.60-IV.C.61.)

/2/ Questor Associates, Feasibility of Performing a Housing Affordability Analysis, June 15, 1982. This study is available for public review at the San Francisco Department of City Planning, 450 McAllister St.

/3/ San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR) EE81.3, certified October 18, 1984. For a description of the methodology used to forecast residence patterns, see Vol. 2, Appendix I, pp. I.8-I.30. For a description of existing and forecast future residence patterns of C-3 District workers, see Vol. 1, Section IV.D, Residence Patterns and Housing. Also see Vol. 3, Summary of Comments and Responses, pp. C&R-D.82 - C&R-D.83 for a discussion of the role of residence patterns forecasts in analyzing future housing market conditions. These sections are hereby incorporated by reference pursuant to State CEQA Guidelines, Section 15150.

/4/ Association of Bay Area Governments, Projections '83. This report presents forecasts from 1980 to 2000 of population, employment, households, and employed residents for each of the nine Bay Area counties.

/5/ Downtown Plan EIR, Vol. 1, p. IV.D.67.

/6/ In order to ensure consistency with the cumulative transportation analysis and to provide information on regionwide impacts, this section does not use the OAHPP formula for estimating the number of workers who would live in San Francisco. This formula only provides an estimate of office workers living in San Francisco; it does not include factors for estimating workers living in other parts of the region. This formula was applied to the project in the project-specific impact section.

/7/ Downtown Plan EIR, Vol. 3, pp. C&R-D.83-94. This subsection presents a summary of the discussion as explained in the EIR Summary of Comments and Responses (pp. C&R-D.83 - C&R-D.94 [see Vol. 1, pp. IV.D.77 - IV.D.82 and Vol. 2, pp. I.1 - I.8]), which is hereby incorporated by reference pursuant to State CEQA Guidelines, Section 15150.

J. GROWTH INDUCEMENT

The project would add about 220,815 gross sq. ft. of office space and about 9,200 sq. ft. of retail space. Employment at the site would increase to about 870 people. Occupants of the proposed project are not known, but could include tenants expanding or relocating from other San Francisco locations, tenants relocating from outside San Francisco, and firms new to the Bay Area. The increase in employment at the project site, therefore, would not necessarily represent employment that is new to San Francisco. If the project were fully leased, however, and the office space of the project did not create permanent vacancies in other San Francisco office buildings, total employment in San Francisco would increase by about 870 jobs due to the project. Approximately 3,330 additional jobs would be supported indirectly in San Francisco through the multiplier effect.

If marketed successfully, the project, together with other planned office development, could have growth-inducing effects by demonstrating a market for office space in this area. This could thereby encourage similar developments on lots (including smaller lots assembled for development) currently occupied by low-rise or mid-rise buildings containing support services. The demand for office space reflects the trend of growth in service sector and headquarters office activities and employment in San Francisco. Increases in downtown office space and employment would contribute to continued growth of local and regional markets for housing, goods, and services. These growth-inducing effects would be less extensive if the vacancy rate for office space rises. Should this occur, projected increases in downtown employment would be less and the growth in demand for goods, services and housing would be lower.

It is expected that some downtown workers would want to live in San Francisco. Employment growth, however, would not be reflected directly to increases in demand for housing and city services to residents, as some new jobs would be held by individuals who already live and work in the City; who prefer to live in the City but previously either did not work, or worked outside the City; who prefer to live in surrounding communities; or by those unable to afford or locate housing in the City. New downtown workers would also increase the demand for housing in other parts of the Bay Area.

Any net increase in employment downtown would increase the demand for retail goods and services in the area. The project would intensify this demand by increasing the amount of employment on the site.

Increases in employment downtown would also increase demand for business services, to the extent that the expanded space would not be occupied by firms providing those services. Business service firms with expanded markets would increase demand for existing space and possibly for further new development. No expansion to the municipal infrastructure not already under consideration would be required to accommodate new development and increased employment due to, or induced by, the project.

The project would continue the escalation of land values and rents in the South of Market area that have been documented by the Department of City Planning./1/

NOTE - Growth Inducement

/1/ Dean Macris, Director of Planning, "Memorandum: South of Market Interim Controls," January 26, 1982.

V. MITIGATION MEASURES PROPOSED TO MINIMIZE POTENTIAL ADVERSE IMPACTS OF THE PROJECT

URBAN DESIGN AND VISUAL QUALITY

MEASURES PROPOSED AS PART OF THE PROJECT

- To reduce obtrusive light or glare, the project would not use mirrored glass on the building.

- To foster pedestrian interest, the project would include retail uses at street level, and a two-story through-site pedestrian arcade connecting Howard and Natoma Sts. To provide visual continuity, the scale of the building base structure would be similar to the scale of neighboring buildings.

- To enhance pedestrian amenity, the project would include landscape elements, such as sidewalk pavers and mature street trees on Howard St. and planters at the main building entrances. Landscaping plans would be implemented in consultation with the Departments of City Planning and Public Works in order to maintain adequate sidewalk width for pedestrians.

- To enhance the visual interest of the project in the skyline, the project would be stepped-back and configured at the upper tower and penthouse levels.

WIND

MEASURES PROPOSED AS PART OF THE PROJECT

- Street trees would be planted along the project's Howard St. frontage to reduce wind speeds on Howard St.

MEASURES UNDER CONSIDERATION

- Additional features which would reduce wind speeds on Howard St. (at location 15) include, but are not limited to, kiosks for newspaper salespersons, flower vendors, telephone booths and/or low ground-level planter boxes. Since this location is across Howard St. from the project site, implementation of this measure would require cooperation from and coordination by the Department of Public Works.

TRANSPORTATION

MEASURES PROPOSED AS PART OF THE PROJECT

- Should Ordinance 224-81, which requires the sponsor to contribute funds for maintaining and augmenting transportation service in an amount proportional to the demand created by the project, be declared invalid by the courts, the project sponsor has agreed to participate in any subsequent equivalent mitigation measures adopted in lieu thereof that are equitable and legal, which the City adopts to apply to all developments which are similarly situated.

- A member of the building management staff would be designated as a "transportation broker" to coordinate measures that are part of a transportation management program, such as: encouraging a flexible time system for employee working hours (to be developed by project tenants in consultation with the Department of City Planning) to reduce peak period congestion by a planned spreading of employee arrivals and departures; encouraging transit use through the on-site sale of BART, Muni, and other carriers' passes to employees; and encouraging employee carpools and vanpool systems in cooperation with RIDES for Bay Area Commuters by providing a central clearinghouse for carpool and vanpool information. This measure would reduce the transportation impacts of the project.

- Secure, safe bicycle storage facilities in excess of the two spaces required by the Planning Code would be provided relative to the demand generated by the project for commuters and short-term visitors.

- During the construction period, construction truck movement would be permitted only between 9:00 a.m. and 4:00 p.m. to minimize peak-hour traffic conflicts. The project sponsor and construction contractor would meet with the Traffic Engineering Division of the Bureau of Engineering of the Department of Public Works, the Fire Department, Muni and the Department of City Planning to determine feasible traffic mitigation measures to reduce traffic congestion during construction of this project and other nearby projects.

- The placement of paving, landscaping or structures in the sidewalk area (subject to City approval) would be done in such a way as to minimize interference with pedestrian traffic.

- While subsurface sidewalk vaults are discouraged, should they be needed, the project sponsor would design subsurface sidewalk vaults to allow for possible future widening of adjacent streets. Vault design shall be of sufficient strength to carry maximum vehicular live and dynamic loads. Design of the vault area to accommodate street trees could also be made, subject to Department of Public Works approval. In addition, should vaults exist or be installed as part of the project, the project sponsor would accommodate and pay for the installation of all subsurface footings, supports and foundations as may be required for future public improvements such as street lights, street trees, trolley wire poles, signs, benches, transit shelters, etc. within project vault areas. Placement of such improvements is entirely within the discretion of the City.

- The project sponsor would, in consultation with the Municipal Railway, install eyebolts or make provisions for direct attachment of eyebolts for Muni trolley wires on the proposed building wherever necessary or agree to waive the right to refuse the attachment of eyebolts to the proposed building if such attachment is done at City expense. (The Muni Five-Year Plans identify existing and proposed routes.)

- Building directories and signs for the service elevators would be placed in the loading area.

- The project sponsor shall: (i) participate with other project sponsors and/or the San Francisco Parking authority in undertaking studies of the feasibility of constructing an intercept commuter parking facility in a location appropriate for such facility to meet the unmet demand for parking for those trips generated by the project which cannot reasonably be made by transit, and (ii) participate with other project sponsors and/or the Municipal Railway in studies of the feasibility of the establishment of a shuttle system serving the project site and the parking facility.

- To meet the short-term parking deficit identified in the EIR, the project sponsor shall (a) provide for the conversion of existing long-term parking spaces in the core to short-term use, and/or (b) provide the short-term parking spaces in the short-term parking belt as defined in the Master Plan, either independently or in association with other project sponsors and/or the San Francisco Parking Authority, to meet the demand for those short-term trips which cannot reasonably be accommodated by public transit.

MEASURES UNDER CONSIDERATION

- Off-street parking spaces would be controlled to assure priority for vanpool and carpool vehicles and vehicles driven by the physically handicapped. All remaining parking spaces would be subject to rates that encourage short-term use of said spaces and discourage all-day parking; the parking rate would be reviewed and approved by the Department of City Planning, or alternatively, the project sponsor would agree to be bound by a formula, to be developed by the Department of City Planning, which structures rates so as to favor short-term parking.

- The parking driveway would include warning devices (lighted signs and noise-emitting devices) to alert pedestrians to vehicles exiting the structure onto Natoma St.

MEASURES THAT COULD BE IMPLEMENTED BY PUBLIC AGENCIES

- The City could implement the transportation improvements described in the Downtown Plan. Cumulative transportation impacts within San Francisco would be reduced by the improvements and, to the extent that San Francisco can influence transportation improvements recommended in the Plan for areas outside the City, implementation of the Plan will reduce regional cumulative impacts caused by downtown growth.

  The City could act to implement the transportation mitigations described in Vol. 1, Section V.E., Mitigation, pages V.E.4-28, in the Downtown Plan EIR. These measures are similar or identical to those in the Downtown Plan and include, in summary: measures to construct and maintain rail rapid transit lines from downtown San Francisco to suburban corridors and major non-downtown centers in San Francisco; measures to fund Vehicle Acquisition Plans for San Francisco and regional transit agencies to expand existing non-rail transit service; provide exclusive transit lanes on City streets and on freeways; reduce incentives to drive by reducing automobile capacities of bridges and highways in certain circumstances and by discouraging long-term parking; measures to encourage carpools, vanpools, and bicycle use; and measures to improve pedestrian circulation within downtown San Francisco. Some of the Implementing Actions would require approval by decision-makers outside the City and County of San Francisco; many of the measures would require action by City agencies other than the City Planning Commission, such as the San Francisco Public Utilities Commission and/or Board of Supervisors. These measures are system-wide measures that must be implemented by public agencies. Other than project-specific measures such as the relevant transportation mitigation measures described above as part of the project or such as the Transit Impact Development Fee assessment required by San Francisco ordinance 224-81 which contribute indirectly to implementation of these system-wide measures, it is not appropriate to impose mitigation at system-wide levels on individual projects.

- Pacific Gas and Electric Company could coordinate work schedules with other utilities requiring trenching, so that street disruption would take place during weekends and off-peak hours. This should be done through the San Francisco Committee for Utility Liaison on Construction and Other Projects (CULCOP). In-street utilities should be installed at the same time as the street is opened for construction of the project to minimize street disruption.

AIR QUALITY

PROPOSED AS PART OF THE PROJECT

- Mitigation measures identified for traffic impacts would also mitigate air quality impacts. Increasing roadway capacity (where feasible and cost effective), reducing vehicular traffic through increased ridesharing (carpool, vanpool, and transit), and implementing flexible and/or staggered work hours would reduce local and regional emissions of all pollutants.

- Mitigation measures identified for housing impacts would also mitigate air quality impacts. Improving the balance of jobs and housing in San Francisco would reduce long-distance home-to-work travel, and would reduce local and regional emissions of all pollutants.

NOISE

MEASURE PROPOSED AS PART OF THE PROJECT

- As recommended by the Environmental Protection Element of the San Francisco Master Plan, an analysis of noise reduction requirements would be prepared for the project and recommended noise insulation features would be included as part of the proposed building.

CONSTRUCTION

MEASURES PROPOSED AS PART OF THE PROJECT

- A detailed foundation and structural design study would be conducted for the building by a California-licensed structural engineer and a geotechnical consultant. The project sponsor would follow the recommendations of these studies during the final design and construction of the project.

- The general contractor would construct barriers around the site and around stationary equipment such as compressors, which would reduce construction noise by as much as five dBA. The general contractor would locate stationary equipment in pit areas or excavated areas as these areas would serve as noise barriers.

- Project sponsor would predrill holes for piles in order to minimize noise and vibration from piledriving. The actual pounding from pile driving would occur during a five to eight minute span per pile.

- Pile driving activity would be limited to result in least disturbance to neighboring uses. This would require a work permit from the Director of Public Works pursuant to San Francisco Noise Ordinance Section 2907c.

- If dewatering were necessary, any groundwater pumped from the site would be retained in a holding tank to allow suspended particles to settle, if this is found necessary by the Industrial Waste Division of the Department of Public Works, to reduce the amount of sediment entering the storm drain/sewer lines.

- Should dewatering be necessary, the final soils report would address the potential settlement and subsidence impacts of this dewatering. Based upon this discussion, the soils report would contain a determination as to whether or not a lateral and settlement survey should be done to monitor any movement or settlement of surrounding buildings and adjacent streets. If a monitoring survey is recommended, the Department of Public Works will require that a Special Inspector (as defined in Article 3 of the Building

Code) be retained by the project sponsor to perform this monitoring. Groundwater observation wells would be installed to monitor the level of the water table and other instruments would be used to monitor potential settlement and subsidence. If, in the judgment of the Special Inspector, unacceptable subsidence were to occur during construction, groundwater recharge would be used to halt this settlement. Costs for the survey and any necessary repairs to service under the street would be borne by the project sponsor.

MEASURE UNDER CONSIDERATION

- The project sponsor would require the contractor to sprinkle demolition sites with water continuously during demolition activity; sprinkle unpaved construction areas with water at least twice per day; cover stockpiles of soil, sand, and other such material; cover trucks hauling debris, soil sand, or other such material; and sweep streets surrounding demolition and construction sites at least once per day to reduce TSP emissions. The project sponsor would require the project contractor to maintain and operate construction equipment so as to minimize exhaust emissions of TSP and other pollutants, by such means as a prohibition on idling motors when equipment is not in use or when trucks are waiting in queues, and implementation of specific maintenance programs (to reduce emissions) for equipment that would be in frequent use for much of a construction period.

HAZARDS

PROPOSED AS PART OF THE PROJECT

- An evacuation and emergency response plan would be developed by the project sponsor or building management staff, in consultation with the Mayor's Office of Emergency Services, to insure coordination between the City's emergency planning activities and the project's plan and to provide for building occupants in the event of an emergency. The project plan would be reviewed by the Office of Emergency Services and implemented by building management insofar as feasible before issuance of final building permits by the Department of Public Works.

- To help implement the City's emergency response plan, the project sponsor would prominently post information for building occupants concerning what to do in the event of a disaster.

CULTURAL

- Should evidence of cultural or historic artifacts of significance be found during project excavation, the Environmental Review Officer (ERO) and the President of the Landmarks Preservation Advisory Board would be notified immediately, and any excavation which could damage such artifacts halted. The project sponsor would select an archaeologist or other expert to help the Office of Environmental Review determine the significance of the find and whether feasible measures, including appropriate security measures, could be implemented to preserve or recover such artifacts. The ERO would then recommend specific mitigaton measures, if necessary.

- Copies of reports prepared according to this mitigation measure would be sent to the California Archaeological Site Survey Office at Sonoma State University. Excavation or construction that might damage the discovered cultural resources would be suspended for a maximum of four weeks (cumulatively for all instances that the ERO has required a delay in excavation or construction) to permit inspection, recommendation and retrieval, if appropriate.

VI. SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED IF THE PROPOSED PROJECT IS IMPLEMENTED

This chapter is subject to final determination by the city Planning Commission as part of its certification process. Chapter VI of the Final EIR will be revised, if necessary, to reflect the findings of the Commission.

No project-specific significant impacts have been identified. Mitigation measures included as part of the project are described in Chapter V., Mitigation Measures, p. 138.

Cumulative development in downtown San Francisco would have a significant effect on the environment in that it would generate cumulative traffic increases as well as cumulative passenger loadings on Muni, BART and other regional transit carriers. These cumulative transportation impacts would cause violations of total suspended particulate (TSP) and localized carbon monoxide (CO) standards in San Francisco with concomitant health effects and reduced visibility. The proposed project would contribute to these cumulative effects.

VII. ALTERNATIVES TO THE PROPOSED PROJECT

A. NO-PROJECT

This alternative would entail no physical change to the site as it now exists. The one-story building presently on the site would remain, presumably in the condition that exists in 1985.

In general, the environmental characteristics of this alternative would remain as described in Section III of this report. Present levels of traffic, air pollution, noise, energy consumption, and shadow and visual effects now attributable to the structure on the site would continue to exist.

The effects identified in Section IV, Environmental Impacts, including increased employment, new housing demand and increased pedestrian and vehicular traffic, transit ridership and parking demand, construction noise and energy use would not occur. In addition, increased shadows attributable to the project would not occur.

This alternative would leave the site open for development proposals at a similar or lesser density at a later date.

The sponsor has rejected this alternative because in the opinion of the project sponsor, this alternative would not fully use the potential allowable space at the site and would not provide a reasonable return on the investment potential for the site.

B. NO TRANSFER OF DEVELOPMENT RIGHTS

Alternative B would not include Transferable Development Rights (TDR). The C-3-O (SD), Downtown Office, Special Development District, allows a basic FAR of 6:1 (excluding certain ground floor and mezzanine level uses as in the C-3-O district).

Alternative B would have 113,140 gross sq. ft. About 72,760 sq. ft. of the total gross floor area is included in the FAR calculation; retail, parking and mechanical space is excluded. The floor area total is within the permitted limit (73,602 sq. ft.) of the 6:1 FAR for the site. No TDRs would be required nor would a Section 309 exception to setback requirements.

This alternative would be ten stories high, excluding a mechanical penthouse, and would be 167 ft. in height, within the proposed height limit of 450 ft. for the area. The building would be similar in design to the proposed project (see Figure 24). Open space of 1,455 sq. ft. would be required. The amount of parking in the basement would remain the same as the project (45 spaces). Ground and mezzanine levels would be for retail use. Floors two through eight and floor ten would be occupied by offices. The ninth and roof levels would contain mechanical space.

The housing requirement for this alternative is 28 units (with 62% reserved for low- and moderate-income households) under Ordinance 358-85, the OAHPP, as compared to 113 units for the project. All would be provided off site. The length of shadows would be reduced by about half under Alternative B because its height would be 146 ft. less than the proposed project.

This alternative would generate about 50% of the person-trip-ends generated by the project. Vehicle trips and trips on transit from this alternative would also be about 50% of those generated by the project. This alternative would generate an average hourly demand for one truck loading dock.

Energy consumption would also be reduced by about 50% from project levels.

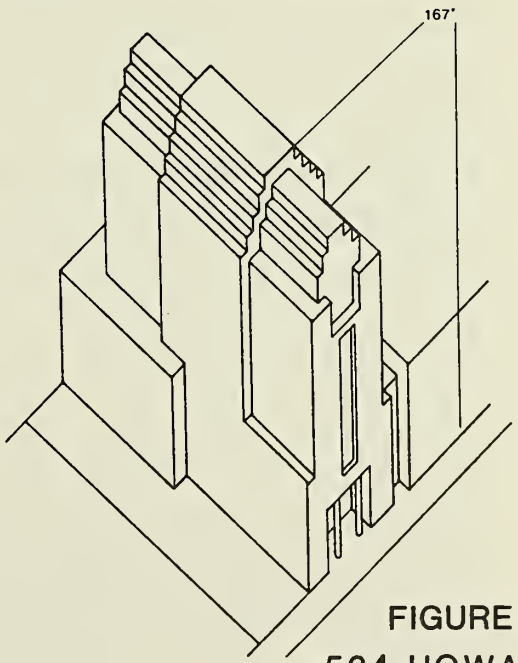


FIGURE 24
524 HOWARD
ALTERNATIVE B
6:1 FAR; NO TDR

SOURCE: KAPLAN/McLAUGHLIN/DIAZ

Wind speeds would be less than those resulting from the project; exceedance of the comfort criterion by a maximum of two mph could still occur in one location across Howard St. from the site.

The sponsor has rejected this alternative because the sponsor believes the project is a better response to the Downtown Plan's designation of the project area as the highest height district in the Plan and because this alternative does not use the Plan's provision for TDR which could increase the potentially developable square footage of the site while implementing the Plan's proposals for preservation of significant buildings.

C. NO EXCEPTIONS TO SETBACK REQUIREMENTS

Alternative C would include 193,865 gross sq. ft. in 24 floors. About 167,960 sq. ft. of the total gross floor area is applicable to the FAR calculation; retail space and parking are excluded from the 13.7:1 FAR. Alternative C would include about 94,360 sq. ft. of Transfer of Development Rights. At a height of about 313 ft. and a setback of 15 ft., this alternative would comply with the Downtown Plan's height, bulk and setback requirements.

The building's design would be similar to the proposed project (see Figure 25). Open space of about 3,359 sq. ft. would be required. The amount of parking in the basement would be the same as the project. The ground floor would be for retail use. The mezzanine and floors three through 23 would be occupied by offices. The 24th level would contain mechanical space.

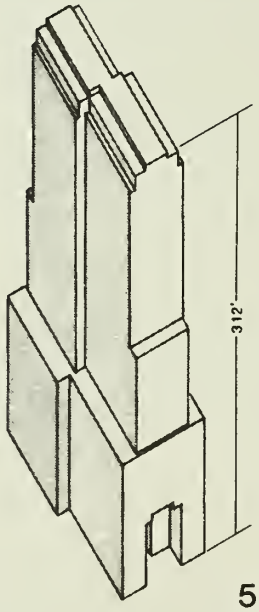


FIGURE 25
524 HOWARD
ALTERNATIVE C
13.7:1 FAR;
NO SETBACK
EXCEPTIONS

SOURCE: HELLER & LEAKE, ARCHITECTS

The housing requirement for this alternative is 65 units (with half reserved for low- and moderate-income households) under OAHPP, compared to 113 units for the project. All would be provided off site. The shadow impacts would be about 10% less than those from the project in terms of length, and would be narrower in width, since this alternative is about 18 ft. narrower than the project.

This alternative would result in about 75% of the person-trip-ends generated by the project. Vehicle trips and trips on transit from this alternative would also be about 75% of those generated by the project. Energy consumption would be reduced by about 25% from project levels.

Wind speeds would be less than those resulting from the project; exceedance of the comfort criterion by a maximum of two mph could still occur at one location across Howard St. from the project site.

The sponsor has rejected this alternative because he believes the project as proposed already responds to the policies of the Downtown Plan and that the setback requirement as applied to such a small site as the project site is a hardship and encourages aggregation of parcels; it could thus, in the sponsor's opinion, result in a much larger project than the smaller one analyzed here. The sponsor also believes that the project would allow greater use of TDR which would increase the potential for preservation of significant buildings. The sponsor also rejects this alternative because it would not allow for the maximum development potential of the site.

D. PARKING ALTERNATIVES

1. REPLACEMENT OF EXISTING SITE PARKING VARIANT

Under this alternative, the building above ground would be the same as the project as proposed. This alternative would contain two subsurface levels with 100 valet parking spaces (the same number as now on the site), compared to one subsurface level with 45 spaces proposed with the project.

The floor area devoted to parking would be about 15,400 sq. ft. Effects of this alternative would be the same as with the proposed project except in the areas of local intersection traffic, parking demand, construction-related effects and cultural resources.

This alternative would provide the same number of parking spaces now on the site. However, since an office building would generate a greater number of trips to the site and since vehicles presently using the existing garage would still travel to the site vicinity, local intersections would experience increased volumes. This increase would not be large enough to affect existing levels of service at these intersections (First and Second Sts. with Howard St.).

Parking demand for this alternative would be the same as with the proposed project, 195 equivalent daily spaces. Provision of 100 parking spaces would mean an on-site parking deficit of 95 spaces, compared to 150 with the project. This alternative would result in less unmet parking demand than the proposed project.

Section 155(g) of the City Planning Code would require that parking rates be structured to discourage long-term commuter use of the parking provided, compared to the existing garage which provides mostly long-term parking. As short-term parking, the parking use would not conflict with goals and policies of the Transportation Element of the Master Plan.

A longer construction period with more excavation and foundation work would be necessary for this alternative, compared to the proposed project. Noise, air quality and traffic related to these activities would thus be more than for the project as proposed.

This alternative could accommodate a future extension of Caltrain, with a train station replacing the parking levels. In such an event, parking would be eliminated on the site.

Excavation for this alternative would be required to a depth of about 16 to 20 ft., compared to about 12 ft. for the proposed project. The deeper the excavation, the greater the likelihood of uncovering prehistoric artifacts.

No prehistoric sites have been identified on the site or in the immediate project vicinity, so the absolute likelihood of discovery cannot be determined. The mitigation measure included as part of the project in the event of a potential historic or prehistoric find would apply to this alternative.

The project sponsor has not rejected this alternative; it is under consideration.

2. NO-PARKING VARIANT

Under this alternative, no parking would be provided on site. While the building could contain a basement, it would not be used for parking and could instead provide mechanical space and/or building storage.

Effects of this alternative would be the same as with the proposed project except for local intersection traffic and parking. Local intersections would experience less traffic than at present from the site and less than with the project. The on-site parking deficit would be 195 equivalent daily spaces, compared to 150 with the proposed project.

The project sponsor has rejected this alternative because it would reduce the attractiveness of the building for potential tenants.

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530 Howard Associates
c/o Kenneth H. Natkin
1 Ecker Building, #210
San Francisco, CA 94105

Raymond L. and Helena Trittschuh
1507 20th Avenue
San Francisco, CA 94122

California School of Mechanical Arts
755 Ocean Avenue
San Francisco, CA 94112

James L. and Marie A. Lavoria
533 Howard St.
San Francisco, CA 94105

Seymour and Aaron Monsky
1085 Rawlins Rd. #312
Burlingame, CA 94010

PROJECT SPONSOR

Alexandre Lui
524 Howard Associates
160 Sansome St., Ste. 1100
San Francisco, CA 94104

PROJECT ARCHITECTS

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Heller & Leake, Architects
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San Francisco, CA 94103

PROJECT ATTORNEY

Timothy Tosta
Tosta & Browning
785 Market St., Ste. 1400
San Francisco, CA 94103

X. APPENDICES

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APPENDIX A: INITIAL STUDY

Differences between the Initial Study and the Environmental Impact Report information are the result of new information or changes to the project.

For example, the project no longer includes a zoning reclassification as part of the project, and the project has been reduced in area and height from the proposal addressed in the Initial Study.

DEPARTMENT OF CITY PLANNING 450 McALLISTER STREET · SAN FRANCISCO CALIFORNIA 941C

NOTICE THAT AN ENVIRONMENTAL IMPACT REPORT IS DETERMINED TO BE REQUIRED

Date of this Notice: June 22, 1984

Lead Agency: City and County of San Francisco, Department of City Planning
450 McAllister Street - 5th Floor, San Francisco, CA 94102

Agency Contact Person: Ginny Puddefoot Telephone: (415) 558-5261

Project Title: 84.199E:
524 Howard Street Office Building and Proposed Rezoning

Project Sponsor: 524 Howard Associates

Project Contact Person: Carl Hagelman
Kaplan/McLaughlin/Diaz

Project Address: Northwest side of Howard Street between 1st and 2nd Streets

Assessor's Block(s) and Lot(s): A/B 3721, Lots 10, 11, 13, 35 and 88

City and County: San Francisco

Project Description: Construct 36-story, 328,525 gross sq.ft. office building on Lot 13, after demolition of one-story garage; and rezone all lots from C-3-S (Downtown Support) to C-3-O (Downtown Office) and from 320 feet to 500 feet maximum height.

THIS PROJECT MAY HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT AND AN ENVIRONMENTAL IMPACT REPORT IS REQUIRED. This determination is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15063 (Initial Study), 15064 (Determining Significant Effect), and 15065 (Mandatory Findings of Significance), and the following reasons, as documented in the Environmental Evaluation (Initial Study) for the project, which is attached.

SEE ATTACHED INITIAL STUDY

Deadline for Filing of an Appeal of this Determination to the City Planning Commission: July 2, 1984.

An appeal requires: 1) a letter specifying the grounds for the appeal, and;
2) a $35.00 filing fee.

ALEC S. BASH, Environmental Review Officer

ASB: BWS: eh
8362A

ER5 4/84

524 HOWARD STREET OFFICE BUILDING AND PROPOSED REZONING
Initial Study
84.199E

I. PROJECT DESCRIPTION

The project sponsor, 524 Howard Associates, proposes to construct a 36-story, 328,525-gross-sq.-ft. office building south of Market St. on a 12,267-sq.-ft. site fronting on Howard and Natoma Sts. between First and Second Sts. (see Figure 1). The irregularly shaped building site is Lot 13 in Assessor's Block 3721. The site is in a C-3-S (Downtown Support) Zoning District in which the basic allowable Floor Area Ratio (FAR) is 7:1. It is in the 320-I Height and Bulk District, in which the maximum allowable height is 320 ft.; the maximum length above 150 ft. is 170 ft. and the maximum diagonal dimension is 200 ft. In order for the building to be approved as it is proposed, the project sponsor is requesting an extension south to Howard St. of the C-3-O (Downtown Office) District (which has a basic allowable FAR of 14:1) currently in effect north of Natoma St. and a similar extension of the 500-I Height and Bulk District. The area covered by the extension would include the site (Lot 13) and the the lots to the east of the site (Lots 10, 11, 35 and 88).

The southern portion of the building site is currently occupied by a 6,000-sq.-ft., one-story masonry garage with a wood-frame roof. The building's architecture has been rated by both the Department of City Planning and the Foundation for San Francisco's Architectural Heritage (see Cultural discussion). The northern portion of the site is a paved, fenced lot. Use of the site has recently been converted from automobile repair (Bay Bridge Garage) to a commercial, valet-style parking facility for about 95 cars. Other land uses on the project block (including the other lots proposed for rezoning) include a mixture of support services, such as printing and lithography, and offices in older, one- to five-story buildings.

The proposed building would be a 495-ft.-tall tower, with a series of setbacks to provide a tapered building appearance (see Figure 2). The tower would be 36 stories high (excluding the mechanical roof level) and would contain a total of about 328,525 gross sq. ft. The proposed building would include: basement parking (12,600 sq. ft.; 45 valet spaces), ground-floor and mezzanine retail (4,425 sq. ft.), 32 floors of office (275,830 sq. ft.), two floors of mechanical (10,235 sq. ft), and two floors of "recreational space" (possibly including a restaurant and health club; 8,035 sq. ft.). The basement subsurface parking level and the two ground-floor off-street loading docks would be accessible from Natoma St.

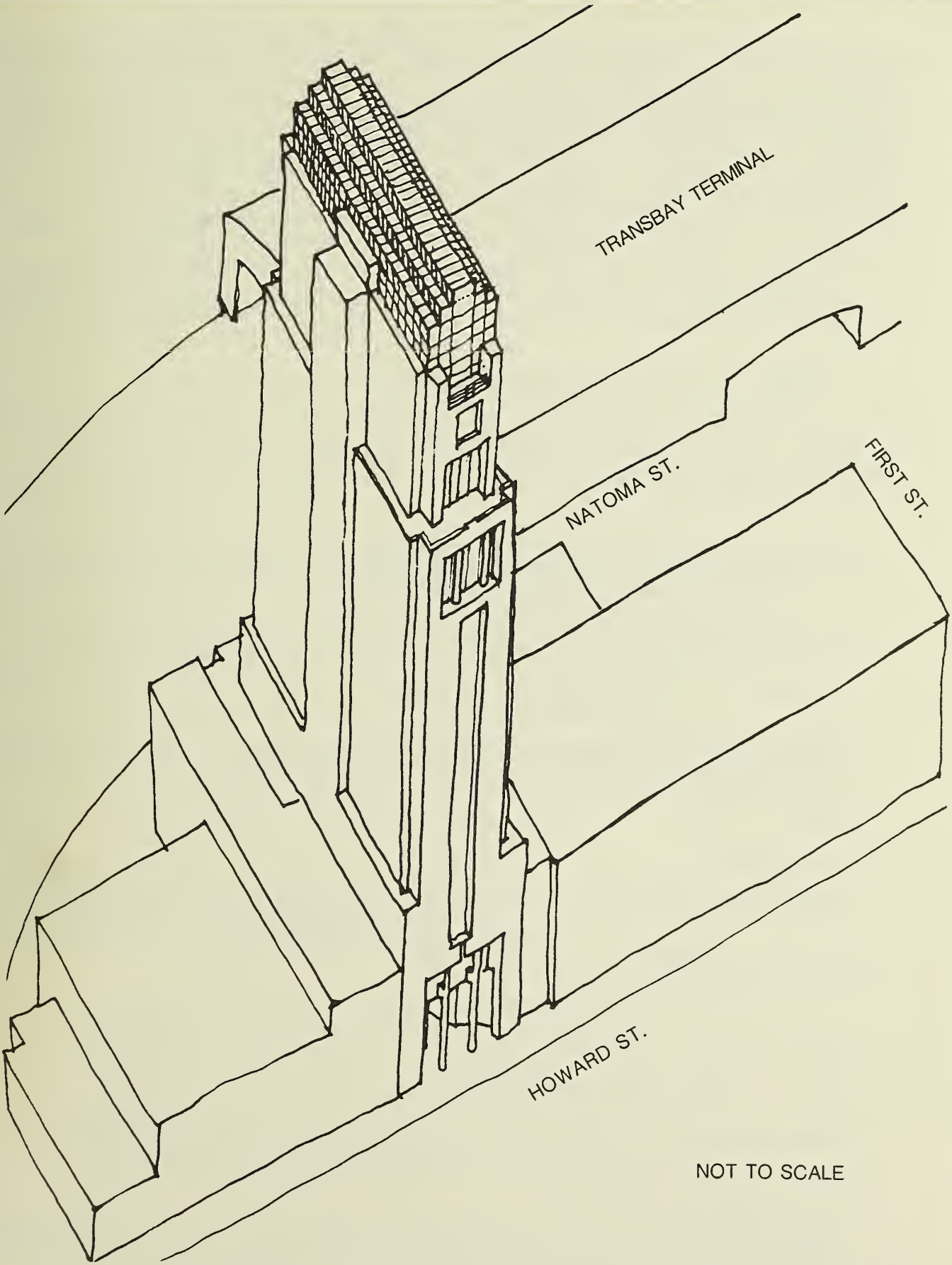
Under the existing Planning Code, approximately 303,460 sq. ft. of the total building area would be included in the FAR calculations, resulting in an FAR (calculated over the site lot area) of 24.7:1. Since the existing FAR is 7:1, the purchase of TDRs (transferable development rights) from adjacent properties would be required for the project. If the development rights from these properties were purchased, the resulting overall FAR of the project and contributing lots (calculated over the lot areas of the site and adjacent properties) would be less than 14:1. The 7:1 FAR currently in effect would allow a building with a basic floor area of 86,000 sq. ft. Up to 15% of the floor area may be used for parking, although no parking is required for nonresidential uses in C-3 districts. The loading space requirement for the project would be three off-street loading docks.

LEGEND

SITE

SOURCE: ESA

FIGURE 1
REGIONAL LOCATION



SOURCE:
KAPLAN/McLAUGHLIN/DIAZ

FIGURE 2
AXONOMETRIC VIEW

The project site is within the area included in the proposed Downtown Plan - Proposal for Citizen Review (August 1983). The Downtown Plan proposes a basic FAR of 6:1 (excluding ground floor retail and lobby areas) for the site and a rezoning of the site to C-3-O (SD), Downtown Office (Special Development) District. In addition, the Downtown Plan proposes changing the existing 320-I Height and Bulk District for the site to 450-S and proposes TDR's from non-adjacent properties. However, the Downtown Plan as currently written would not allow the use of TDRs for the project because it would result in the demolition or substantial alteration of the on-site garage, which is classified as a Category III (contributory) structure under the Downtown Plan.

The project sponsor is 524 Howard Associates; the project architect is Kaplan/McLaughlin/Diaz (K/M/D).

II. SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS

The proposed project is examined in this Initial Study in order to determine potential effects on the environment. The following potential effects have been identified and will be analyzed in an Environmental Impact Report (EIR) to be prepared on the project.

- Relationship of the rezoning, the change in height and bulk district, and the characteristics of the proposed building to the City Planning Code, the Master Plan and the proposed Downtown Plan;
- Relationship of the rezoning, change in height and bulk district and the proposed building to, and effect on, land uses in the project vicinity;
- Distant and near views of the project and its visual aspects;
- Relationship of the project to the Urban Design Element of the Master Plan and to the appearance and scale of surrounding buildings;
- Shadow effects;
- Wind effects;
- Housing demand generated by the project and impacts on the job market;
- Vehicular and pedestrian traffic, transit, and parking;
- Construction noise and vibration;
- Traffic-generated air quality effects;
- Energy consumption and conservation;
- Effects on architecturally and/or historically significant structures;
- Growth-inducing effects; and
- Project contributions to cumulative traffic increases in the downtown area.

The following potential environmental impacts were determined either to be insignificant or to have been mitigated through measures included in the

project. These items require no further environmental analysis and will not be addressed in the EIR:

Visual Quality: No glare or light substantially affecting other properties would be generated by the proposed building because of the use of tinted glass on all but the ground floor.

Noise: After completion, building operation would not increase perceptible noise levels in the project vicinity.

Air Quality: Construction of the proposed building would have short-term effects on air quality in the project vicinity. A mitigation measure to reduce particulate emissions generated during construction activities to insignificant levels is included in the project.

Utilities / Public Services: The proposed project would increase demand for utilities and public services, but would not require additional service facilities.

Biology: The proposed project would not affect any plants or animals, as the site is completely urbanized.

Geology/Topography: A geotechnical report would be prepared by a California-licensed engineer. The project sponsor and contractor would follow recommendations made in that report regarding building construction. A measure to mitigate potential impacts associated with excavation and dewatering are included in the project.

Water: The project would not affect drainage patterns or water quality because the site is entirely covered with impermeable surfaces.

Hazards: The project would neither cause health hazards (other than those discussed for air quality effects) nor would it be affected by hazardous uses. A mitigation measure to reduce any possible conflicts with the City's Emergency Response Plan is included in the project.

Cultural Resources: A mitigation measure to protect any archaeological resources, should any be discovered on the site, is included in the project.

A. COMPATIBILITY WITH EXISTING ZONING AND PLANS	Not Applicable	Discussed
1) Discuss any variances, special authorizations, or changes proposed to the City Planning Code or Zoning Map, if applicable.	___	X
* 2) Discuss any conflicts with the Comprehensive Plan of the City and County of San Francisco, if applicable.	___	X
* 3) Discuss any conflicts with any other adopted environmental plans and goals of the City or region, if applicable.	X	___

The project would include a zoning reclassification from the C-3-S to the C-3-O District, and a change of the Height and Bulk District from 320-I to

500-I. Zoning and the relationship of the project to policies of the City's Comprehensive Plan and the proposed Downtown Plan will be discussed in the EIR.

B. ENVIRONMENTAL EFFECTS. Could the project:

1) Land Use	Yes	No	Discussed
*a. Disrupt or divide the physical arrangement of an established community?	___	X	___
b. Have any substantial impact upon the existing character of the vicinity?	X	___	X

Surrounding land use is a mixture of support services and offices in older, one- to five-story buildings. The relationship of the proposed land use to the existing use of the site and to surrounding land uses will be discussed in the EIR.

2) Visual Quality	Yes	No	Discussed
*a. Have a substantial, demonstrable negative aesthetic effect?	___	X	___
b. Substantially degrade or obstruct any scenic view or vista now observed from public areas?	___	X	___
c. Generate obtrusive light or glare substantially impacting other properties?	___	X	X

The surrounding buildings in the project area are one- to five-story buildings. The EIR will discuss distant and near views of the project, the project's visual aspects, and its relationship to the Urban Design Element of the Comprehensive Plan and to the appearance and scale of surrounding buildings.

The building would have tinted glass with the exception of the ground floor, which would have clear glass. Therefore, the building would not generate light or glare affecting other properties and this issue will not be discussed in the EIR.

3) Population	Yes	No	Discussed
*a. Induce substantial growth or concentration of population?	X	___	X
*b. Displace a large number of people (involving either housing or employment)?	___	X	X
c. Create a substantial demand for additional housing in San Francisco, or substantially reduce the housing supply?	X	___	X

The on-site parking garage is currently operated by the Metropark Corporation, which has one employee on-site. No loss of employment would occur since this employee would be transferred to another Metropark location. The proposed building would increase the daytime population at the site by about 1,100 people and would also generate about 350 construction jobs. The building would have secondary impacts on the job market in the City and Bay Area and

*Derived from State EIR Guidelines, Appendix G, normally significant effect.

could create an additional demand for housing in San Francisco. These issues will be discussed in the EIR. Potential employment changes as a result of rezoning will also be discussed in the EIR.

4) Transportation/Circulation	Yes	No	Discussed
*a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system?	X		X
b. Interfere with existing transportation systems, causing substantial alterations to circulation patterns or major traffic hazards?		X	X
c. Cause a substantial increase in transit demand which cannot be accommodated by existing or proposed transit capacity?	X		X
d. Cause a substantial increase in parking demand which cannot be accommodated by existing parking facilities?	X		X

Increased employment at the building site would increase demand on existing transportation systems to a point which could be substantial relative to existing unused capacity. The number of pedestrians in the area would also increase. The project would not cause alterations to existing circulation patterns, but its effects on circulation patterns will be discussed in the EIR. All project-related impacts and cumulative traffic, transit, parking and pedestrian impacts will be discussed in the EIR.

5) Noise	Yes	No	Discussed
*a. Increase substantially the ambient noise levels for adjoining areas?	X		X
b. Violate Title 25 Noise Insulation Standards, if applicable?		X	X
c. Be substantially impacted by existing noise levels?		X	X

Demolition, excavation and building construction would increase noise in the site vicinity. Construction noise in the project vicinity will be addressed in the EIR.

The downtown San Francisco noise environment is dominated by vehicular traffic noise. The Environmental Protection Element of the San Francisco Master Plan indicates an existing day-night average noise level (Ldn)/1/ of 75 dBA/2/ on Howard St. in 1974.

The Environmental Protection Element contains guidelines for determining the compatibility of land uses with various noise environments. For office uses the guidelines recommend no special noise control measures in an exterior noise environment up to an Ldn of 70 dBA. For the 75 dBA noise level, the guidelines recommend an analysis of noise reduction requirements and inclusion of noise insulation features in the building design. The project sponsor has indicated that noise insulation measures would be included as part of the design.

Noise would not perceptibly exceed existing levels after building completion. Traffic generated by the building would increase traffic noise by less than one dBA. A one dBA increase in environmental noise is imperceptible to the untrained human ear.

Mechanical equipment for building operation would be regulated by San Francisco Noise Ordinance 2909, which limits noise at the property line to 70 dBA from 7 a.m. to 10 p.m. and 60 dBA from 10 p.m. to 7 a.m.

Title 25 applies to residential uses and would not be applicable to the project, since no residential units are proposed.

Further discussion of operational noise will not be included in the EIR.

NOTES - Noise

/1/ Ldn, the day-night average noise level, is a noise measurement based on human reaction to cumulative noise exposure over a 24-hour period, taking into account the greater annoyance of nighttime noises; noise between 10 p.m. and 7 a.m. is weighted 10 dBA higher than daytime noise.

/2/ dBA is a measure of sound in units of decibels (dB). The "A" denotes the A-weighted scale, which simulates the responses of the human ear to various frequencies of sound.

6) Air Quality / Climate	Yes	No	Discussed
*a. Violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation?	X		X
*b. Expose sensitive receptors to substantial pollutant concentrations?		X	X
c. Permeate its vicinity with objectionable odors?		X	
d. Alter wind, moisture or temperature (including sun shading effects) so as to substantially affect public areas, or change the climate either in the community or region?	X		X

Air quality data collected by the Bay Area Air Quality Management District show that San Francisco experiences infrequent violations of the ambient air quality standards for ozone, carbon monoxide (CO) and total suspended particulates (TSP). Climatic conditions in San Francisco allow rapid dispersal of air pollutants, so that local stationary sources of emissions rarely create a measurable impact at monitoring stations. Rather, their impact is to add to regional accumulations of pollutants.

Two types of air quality impacts could be expected from the proposed building: short-term impacts from construction activity, and long-term impacts related to use and operation of the structure. Construction activities would temporarily affect local air quality. Dust emissions during demolition and excavation would increase particulate concentrations adjacent to the site. Dustfall can be expected at times on surfaces within 200 to 400 ft. of the

site under low winds; under high winds, human discomfort may occur downwind from blowing dust.

The project sponsor has agreed to mitigation measures to reduce particulate emissions generated during construction activities. Construction air quality effects will not be discussed in the EIR.

Building emissions would arise from natural gas combustion and would be at roof level. Annual emissions from building operation would represent less than five percent of building-related emissions. Traffic generated by the proposed building would produce the primary (over 95%) air quality impact from the project and would incrementally degrade air quality. Traffic-generated and operational air quality effects will be discussed in the EIR.

Buildings in the project area are one- to five-story industrial and office buildings. The proposed building could increase shadows on sidewalks and structures near the project, and on the Transbay Terminal Plaza. This will be discussed in the EIR.

A wind tunnel analysis has been recommended by a certified consulting meteorologist./1/ Although the current design differs from the one initially assessed by the meteorologist, the design incorporates features which could cause adverse ground-level wind effects. The findings of the wind tunnel analysis (based on the current design) will be described in the EIR.

NOTE - Air Quality / Climate

/1/ Donald Ballanti, Certified Consulting Meteorologist, letter, March 30, 1983.

7) Utilities / Public Services	Yes	No	Discussed
*a. Breach published federal, state or local standards relating to solid waste or litter control?	___	X	___
*b. Extend a sewer trunk line with capacity to serve new development?	___	X	X
c. Substantially increase demand for schools, recreation or other public facilities?	___	X	X
d. Require major expansion of power, water, or communications facilities?	___	X	X

The providers of utilities and public services have been contacted and have indicated that they have adequate capacity to serve the project and would not require additional personnel or equipment. Statements from these service providers are available for public review at the Office of Environmental Review, 450 McAllister St., 5th Floor. No further analysis is necessary and the topic will not be discussed in the EIR.

8) Biology	Yes	No	Discussed
*a. Substantially affect a rare or endangered species of animal or plant or the habitat of the species?	___	X	___
*b. Substantially diminish habitat for fish, wildlife or plants, or interfere substantially with the movement of any resident or migratory fish or wildlife species?	___	X	___
c. Require removal of substantial numbers of mature, scenic trees?	___	X	___

9) Geology/Topography	Yes	No	Discussed
*a. Expose people or structures to major geologic hazards (slides, subsidence, erosion and liquefaction)?	___	X	X
b. Change substantially the topography or any unique geologic or physical features of the site?	___	X	X

The project site is in a Special Geologic Study Area as designated in the Community Safety Element of the Master Plan. The preliminary soils report/1/ for the project indicates, from borings located near but not on the site, that the uppermost layer is artificial fill composed predominantly of sand but includes silt, clay, wood, brick, glass and other debris. This is underlain by 10 to 20 feet of medium dense, relatively clean dune sand. Dense sand and very stiff clay layers occur beneath the dune sand layer. Franciscan bedrock occurs at a depth of about 200 ft. The groundwater level is located at 18 to 20 feet below street level. The site is in an area of potential liquefaction and subsidence hazards. Groundshaking is expected to be "strong" on the site for a major earthquake of the 1906 magnitude. The site is not in an area of tsunami inundation or potential landslides. There is an inactive fault approximately three blocks southeast of the site.

Excavation would be required for the proposed subsurface parking level, but would probably not extend to the groundwater level. If excavation extends below groundwater level, dewatering may be necessary. Drawdown of the groundwater level outside the excavation could produce some local subsidence, which could damage the streets or older buildings in the immediate vicinity of the site. Should dewatering be necessary, the project sponsor has agreed to a mitigation measure to mitigate potential impacts associated with excavation and dewatering.

In accordance with Bureau of Building Inspection requirements, the project sponsor would obtain a site-specific soils report from a licensed soils engineer or geologist and has agreed to construct the building in accordance with the recommendations of this detailed investigation with regard to foundation and structure; as proof of compliance, a copy of the report would be submitted with the Building Permit application. These issues will not be discussed in the EIR.

NOTE - Geology/Topography

/1/ Harding Lawson Associates, May 9, 1984, Preliminary Soil Investigation, 524 Howard Street Project. This report is on file with the Department of City Planning, Office of Environmental Review, 450 McAllister St., 5th Floor.

10) Water	Yes	No	Discussed
a. Substantially degrade water quality, or contaminate a public water supply?	___	X	___
b. Substantially degrade or deplete ground water resources, or interfere substantially with ground water recharge?	___	X	___
c. Cause substantial flooding, erosion or siltation?	___	X	___

The project would not affect drainage patterns or water quality because the site is now entirely covered with impermeable surfaces. These issues will not be discussed in the EIR.

11) Energy/Natural Resources	Yes	No	Discussed
*a. Encourage activities which result in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner?	___	X	X
b. Have a substantial effect on the potential use, extraction, or depletion of a natural resource?	X	___	X

The building would be designed and constructed to conform with the energy requirements of Title 24 of the California Administrative Code. In comparison with the existing building, the greater size of the proposed building would increase the total amount of energy consumed at the site. The proposed building would contribute to the cumulative energy consumption that will result in depletion of non-renewable resources. Energy consumption and conservation will be discussed in the EIR.

12) Hazards	Yes	No	Discussed
*a. Create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected?	___	X	___
*b. Interfere with emergency response plans or emergency evacuation plans?	___	X	X
c. Create a potentially substantial fire hazard?	___	X	___

The proposed building would result in a greater number of people on the site, which would increase the difficulty of evacuating people from the site in an emergency. The hazard mitigation measure committed to by the project sponsor would serve to mitigate this impact. No further analysis is necessary.

13) Cultural	Yes	No	Discussed
*a. Disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group; or a paleontological site except as a part of a scientific study?	___	X	___
b. Conflict with established recreational, educational, religious or scientific uses of the area?	___	X	___
c. Conflict with preservation of any buildings of City landmark quality?	X	___	X

A building and paved parking lot currently occupy the building site. No known archaeological resources exist on or near the site. If any artifacts were to be discovered during site excavation, the project sponsor is committed to the mitigation measure on p. 17 regarding archaeological resources. No further discussion of archaeological resources in the EIR is necessary.

The building currently located at 524 Howard St. has been rated "B" (on a scale of "A" as the highest to "D" as the lowest) in an architectural survey conducted in 1982 by the Foundation for San Francisco's Architectural Heritage. The building has been rated "2" (on a scale of "0" as the lowest to "5" as the highest) in the Department of City Planning 1976 Architectural Inventory Survey. The proposed Downtown Plan rates the building "Category III", identifying it as a contributory building "...very good in architectural quality, but lower than very good in relationship to the environment, or vice versa, and located outside conservation districts." The Downtown Plan would encourage retention of the building but allow replacement. This building is proposed for demolition as part of the project.

The adjacent building to the east of the site is rated "B" in the 1982 architectural survey by the Foundation for San Francisco's Architectural Heritage, and "0" in the Department of City Planning Survey. The proposed Downtown Plan rates the building "Category I", excellent in architectural quality. The Downtown Plan would require retention of the building, essentially intact, but would allow a transfer of development rights (TDR) from the site to another site in the C-3 District.

Architectural resources will be discussed in the EIR.

C. OTHER	Yes	No	Discussed
Require approval of permits from City Departments other than Department of City Planning or Bureau of Building Inspection, or from Regional, State or Federal agencies?	___	X	___

D. MITIGATION MEASURES	Yes	No	N/A	Discussed
1. If any significant effects have been identified, are there ways to mitigate them?	X			X
2. Are all mitigation measures identified above included in the project?	X			X

Mitigation measures currently proposed as part of the project are listed below. Other mitigation measures may be identified during subsequent environmental review and will be included in the EIR.

Noise

- As recommended by the Environmental Protection Element of the San Francisco Master Plan, an analysis of noise reduction requirements would be prepared for the project and recommended noise insulation features would be included as part of the proposed building.

Air Quality

- During construction, the project sponsor would require the general contractor to wet down demolition and construction areas at least twice a day to reduce dust generation by approximately 50%.

Geology/Topography

- Should dewatering be necessary, the final soils report shall address the potential settlement and subsidence impacts of this dewatering. Based upon this discussion, the report shall contain a determination as to whether or not a lateral and settlement survey to monitor any movement or settlement of surrounding buildings and adjacent streets is necessary.

  If a monitoring survey is recommended, the Department of Public Works will require that a Special Inspector (as defined in Article 3 of the Building Code) be retained by the project sponsor to perform this monitoring. If, in the judgment of the Special Inspector, unacceptable subsidence were to occur during construction, groundwater recharge would be used to halt this settlement. Cost for the survey and any necessary repairs to service under the street would be borne by the contractor.

Hazards

- An evacuation and emergency response plan would be developed by the project sponsor or building management staff, in consultation with the Mayor's Office of Emergency Services, to insure coordination between the City's emergency planning activities and the project's plan and to provide for building occupants in the event of an emergency. The project plan would be reviewed by the Office of Emergency Services and implemented by building management insofar as feasible before issuance by the Department of Public Works of final building permits.

Cultural

- The sponsor, prior to the issuance of a site permit, shall employ an archaeologist or historian or other expert acceptable to the Environmental Review Officer to develop a plan for such archaeological investigations as may be appropriate during the excavation phase of the construction. This plan shall be reviewed and approved by the Environmental Review Officer prior to any excavation on the site, and upon approval shall be followed by the sponsor and project contractor during that excavation activity. Should evidence of historic or prehistoric artifacts be uncovered at the site during construction, the project sponsor shall be responsible for, and shall require the following: (1) that the contractor notify the Environmental Review Officer and the President of the Landmarks Preservation Advisory Board; (2) that the contractor suspend construction in the area of the discovery for a maximum of four weeks to permit review of the find, and if appropriate, retrieval of artifacts; (3) that the project sponsor pay for an archaeologist or historian acceptable to the Environmental Review Officer to help review the find and identify feasible measures, if any, to preserve or recover artifacts; and (4) if feasible mitigation measures are identified, that they will be implemented, but need not exceed 1% of total construction cost as indicated on the Building Permit application on file with the Department of Public Works.

E. MANDATORY FINDINGS OF SIGNIFICANCE	Yes	No	Discussed
*1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or pre-history?	___	X	___
*2. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	___	X	___
*3. Does the project have possible environmental effects which are individually limited, but cumulatively considerable? (Analyze in the light of past projects, other current projects, and probable future projects.)	X	___	X
*4. Would the project cause substantial adverse effects on human beings, either directly or indirectly?	___	X	___
*5. Is there a serious public controversy concerning the possible environmental effect of the project?	___	X	___

The project could contribute to cumulative effects on transportation and on land use trends in the Downtown area. This will be analyzed in the EIR.

F. ON THE BASIS OF THIS INITIAL STUDY:

___ I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared by the Department of City Planning.

___ I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because the mitigation measures, have been included as part of the proposed project. A NEGATIVE DECLARATION will be prepared.

✓ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Alec S. Bash
Environmental Review Officer

for

Dean Macris
Director of Planning

Date: 6/20/84

APPENDIX B: WIND STUDY METHODOLOGY

This summary of wind study methodology is based on studies by Bruce R. White, Ph.D., Associate Professor of Mechanical Engineering at the University of California, Davis. The studies are independent of the University. These reports are available for review at the Department of City Planning, Office of Environmental Review, 450 McAllister St.

I. INTRODUCTION

Wind tunnel tests were conducted for winds on the project site in its existing condition (with approved development), with the project and with nearby proposed development, in relation to Section 148 of the City Planning Code. Wind tunnel measurements were used to predict equivalent mean wind speeds/1/ near the project site. These mean wind speeds were compared to comfort criteria, based on the onset of uncomfortable physical effects of the wind of 11 mph for pedestrian areas and seven mph for sitting areas.

A 1 inch = 50 feet scale model of the downtown San Francisco area surrounding the proposed building for several blocks in all directions was provided by Environmental Science Associates, Inc. All existing and approved development and buildings that are under construction in the project area were included in the model.

The model was tested in a wind tunnel that allows testing of natural atmospheric boundary layer flows past surface objects such as buildings and other structures. The tunnel has an overall length of 22 meters (m) (72 feet), a test section of 1.22 m (4 feet) wide by 1.83 m (6 feet) high, and an adjustable false ceiling. The adjustable ceiling and turbulence generators allow speeds within the tunnel to vary from 1 to 4 meters per second (m/s) or 4.8 to 19.3 miles per hour (mph).

The wind tunnel study was divided into two parts: flow visualization and wind-speed measurements. The flow visualization observations were performed by injecting a continuous stream of smoke at various near-surface locations. The subsequent motion of the smoke was recorded, and prevailing wind directions were determined. Wind-speed measurements were made with a hot-wire anemometer, an instrument that directly relates wind speeds to rates of heat transfer by electronic signals. The hot-wire signals are proportional to the magnitude and steadiness of the wind. Both the mean wind speeds and corresponding turbulence intensities were measured. Thus, high wind speeds and gustiness (changes in wind speeds over short periods of time) could be detected. Hot-wire measurements made close to the surface have an inherent uncertainty of $\pm$ 5% of the true values. The ratio of near-surface speed to freestream wind speed was calculated from the hot-wire measurements.

Twenty test locations were studied for four prevailing wind directions (northwesterly, west-northwesterly, westerly, and west-southwesterly). These wind conditions are the most common in San Francisco, and are therefore the most representative for evaluation purposes. All hot-wire measurements were taken at the same series of surface points around the building site for the four wind directions.

Methodology and Assumptions

Section 148 is defined in terms of equivalent wind speed. This term denotes a one-hour average wind speed (mean velocity), adjusted to include the level of gustiness and turbulence.

The mean wind velocities at street level were determined by a wind tunnel test, and a comparison of the test results with statistically representative records of wind data collected atop the Old Federal Building. Data describing the speed, direction and frequency of occurrence of winds were gathered at the old San Francisco Federal Building, at 50 United Nations Plaza, during the three-year period 1945, 1946, and 1947. Measurements which were made hourly on an annual basis have been tabulated for each month in three-hour periods using seven classes of wind speed and 16 compass directions. Analysis of these data shows that during the hours from 7:00 a.m.-6:00 p.m., about two-thirds of the winds blow from four of the 16 directions, as follows: Northwest (NW), 15%; West Northwest (WNW), 28%; West (W), 19%; West Southwest (WSW), 4%; and all other winds (including calm periods), 34%.

Each wind tunnel test measurement results in a ratio that relates the speed of ground-level wind to the speed of the freestream wind. (The freestream wind is the wind at an altitude high enough so that surface features do not slow the wind.) The wind that is measured is an equivalent wind speed value which is adjusted to include the level of gustiness or turbulence present.

The frequency with which a particular wind velocity is exceeded at any test location is then calculated by using the measured wind tunnel ratios and a specific ground speed to determine the corresponding freestream wind speed for each direction. In general, this gives different freestream speeds for each direction (NW, WNW, W, WSW, and Other). The wind data for San Francisco are then used to calculate the percentage of the time each freestream speed would be exceeded. The sum of these is the total percentage of time that the specified ground-level wind speed is exceeded. A computer is used to calculate the total percentages for a series of wind speeds until the speed corresponding to the speed exceeded 10% of the time is found. Throughout the following discussion, the wind speeds reported refer to the equivalent wind speeds that would be exceeded 10% of the time.

Section 148 sets comfort levels of 11 mph equivalent wind speed for areas of substantial pedestrian use and seven mph for public seating areas. New buildings and additions to buildings may not cause ground level winds that would exceed these levels more than 10% of the time year round between 7:00 a.m. and 6:00 p.m. If existing conditions exceed the comfort level, new buildings and additions shall be designed to reduce ambient wind speed to meet the requirements, except when it is shown that the building or addition cannot be shaped or wind baffling measures cannot be adapted to meet these requirements without creating an unattractive building form and without unduly restricting development of the site. No building or addition that would cause wind speeds to exceed the 26 mph hazard level for a single hour of any year is permitted. Where the existing wind exceeds 11 mph, the project may cause no more than a 3% increase in the frequency of occurrence of winds greater than 11 mph.

Study Results

Study results are shown in Table B-1. The existing wind speeds are seven mph or less at 18 test locations and are nine to 10 mph at the two other locations; winds at all of the locations meet the 11 mph pedestrian comfort criterion.

The project would cause the winds to increase at nine of the 20 locations, to remain the same at three locations, and to decrease at eight locations. Winds would exceed the 11 mph comfort criterion at one point, Location 15, which is opposite the project site across Howard St. The existing wind speed is 10 mph; the project would result in a wind speed of 13 mph.

NOTE - Appendix B: Wind

/1/ Equivalent wind speed is defined as the mean wind times the quantity (1 + 3 times the turbulence intensity) divided by 1.45.

TABLE B-1: PEDESTRIAN-LEVEL WIND SPEEDS (MPH) EXCEEDED 10 PERCENT OF THE TIME AT LOCATIONS SHOWN IN FIGURE B-1

LOCATION	EXISTING SETTING	PROJECT 18:1 FAR
No. 1	4	8
No. 2	5	11
No. 3	4	7
No. 4	4	4
No. 5	4	4
No. 6	4	3
No. 7	6	6
No. 8	6	7
No. 9	4	5
No. 10	6	7
No. 11	5	4
No. 12	5	6
No. 13	5	11
No. 14	7	5
No. 15	10	13
No. 16	7	5
No. 17	7	5
No. 18	5	4
No. 19	9	5
No. 20	6	4

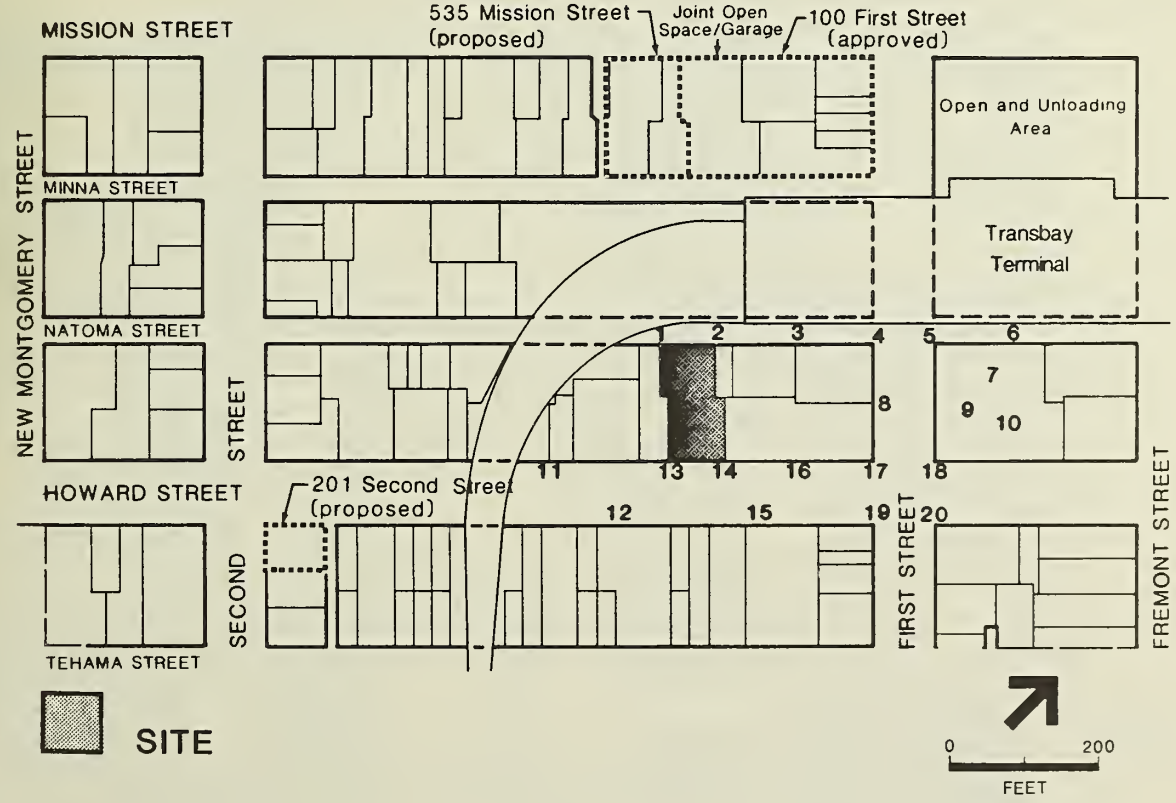


FIGURE B-1
LOCATIONS OF NEAR SURFACE POSITIONS FOR WIND-SPEED MEASUREMENTS

SOURCE: BRUCE WHITE, PH.D. AND ESA

APPENDIX C: Transportation

TABLE C-1: PASSENGER LEVELS OF SERVICE ON BUS TRANSIT

Level of Service	Description	Passengers per Seat
A	Level of Service A describes a condition of excellent passenger comfort. Passenger loadings are low with less than half the seats filled. There is little or no restriction on passenger maneuverability. Passenger loading times do not affect scheduled operation.	0.00-0.50
B	Level of Service B is in the range of passenger comfort with moderate passenger loadings. Passengers still have reasonable freedom of movement on the transit vehicle. Passenger loading times do not affect scheduled operations.	0.51-0.75
C	Level of Service C is still in the zone of passenger comfort, but loadings approach seated capacity and passenger maneuverability on the transit vehicle is beginning to be restricted. Relatively satisfactory operating schedules are still obtained as passenger loading times are not excessive.	0.76-1.00
D	Level of Service D approaches uncomfortable passenger conditions with tolerable numbers of standees. Passengers have restricted freedom to move about on the transit vehicle. Conditions can be tolerated for short periods of time. Passenger loadings begin to affect schedule adherence as the restricted freedom of movement for passengers requires longer loading times.	1.01-1.25
E	Level of Service E passenger loadings approach manufacturers' recommended maximums and passenger comfort is at low levels. Freedom to move about is substantially diminished. Passenger loading times increase as mobility of passengers on the transit vehicle decreases. Scheduled operation is difficult to maintain at this level. Bunching of buses tends to occur which can rapidly cause operations to deteriorate.	1.26-1.50
F	Level of Service F describes crush loadings. Passenger comfort and maneuverability is extremely poor. Crush loadings lead to deterioration of scheduled operations through substantially increased loading times.	1.51 1.60

SOURCE: Environmental Science Associates, Inc. from information in the Interim Materials on Highway Capacity, Transportation Research Circular 212, pp. 73-113, Transportation Research Board, 1980.

M OCEAN VIEW - CIVIC CENTER STATION
Wednesday, September 9, 1981 - 8:20 A.M. - Inbound

L TARAVAL - VAN NESS STATION
Wednesday, September 16, 1981 - 4:50 P.M. - Outbound

14 MISSION - MISSION STREET AND SOUTH VAN NESS AVE
Tuesday, September 29, 1981 - 5.45 P.M. - Outbound

N JUDAH - DUBOCE AND CHURCH
Wednesday, June 8, 1983 - 8:00 A.M. - Inbound

FIGURE C-1
PHOTOS OF MUNI PEAK LOADING CONDITIONS

SOURCE: ESA

K INGLESIDE - VAN NESS STATION
Wednesday, September 9, 1981 - 8:00 A.M. - Inbound

N JUDAH - VAN NESS STATION
Wednesday, September 16, 1981 - 5:00 P.M.-Outbound

38 GEARY - VAN NESS AVE. AND O'FARRELL ST.
Wednesday, October 21, 1981 - 9:00 A.M. - Inbound

38 GEARY - VAN NESS AVE. AND GEARY BLVD.
Wednesday, October 21, 1981 - 4:20 P.M. - Outbound

FIGURE C-1(CONTINUED)
PHOTOS OF MUNI PEAK LOADING CONDITIONS

SOURCE: ESA

30X MARINA EXPRESS - BAYSHORE AVE. AND ARIETA AVE.
Wednesday, October 7, 1981 - 8:00 A.M. - Inbound

J CHURCH - CHURCH ST. AND DUBOCE AVE.
Tuesday, September 29, 1981 - 9:00 A.M. - Inbound

SOURCE: ESA

FIGURE C-1 (CONTINUED)
PHOTOS OF MUNI PEAK LOADING CONDITIONS

PEDESTRIAN ANALYSIS

The pedestrian analysis has been conducted following methods developed by Pushkarev and Zupan in Urban Space for Pedestrians (MIT Press, 1975). Table C-2 shows the relationship between pedestrian flow rates and the flow regimes (categories) used to describe levels of operation. Figure C-2, p. A-28 shows photographs of pedestrian conditions that correspond to the flow regimes.

TABLE C-2: PEDESTRIAN FLOW REGIMEN

FLOW REGIME*	CHOICE	CONFLICTS	FLOW RATE (p/f/m)**
Open	Free Selection	None	less than 0.5
Unimpeded	Some Selection	Minor	0.5 to 2.0
Impeded	Some Selection	High Indirect Interaction	2.1 to 6.0
Constrained	Some Restriction	Multiple	6.1 to 10.0
Crowded	Restricted	High Probability	10.1 to 14.0
	Design Limit - Upper Limit of Desirable Flow		
Congested	All Reduced	Frequent	14.1 to 18.0
Jammed	Shuffle Only	Unavoidable	Not applicable***

* Photographs of these conditions are shown in Figure C-2, p. A-14.
** P/F/M = Pedestrians per foot of effective sidewalk width per minute.
*** For Jammed Flow, the (attempted) flow rate degrades to zero at complete breakdown.

SOURCE: Urban Space for Pedestrians, MIT Press, 1975, Cambridge, MA.

The borderline between IMPEDED and UNIMPEDED FLOW, with about 130 sq ft (12 m^2) per person, or a flow rate of about 2 people per min per ft (6.5 per m) of walkway width. Individuals as well as couples visible in this view have a choice of speed and direction of movement. This rate of flow is recommended for design of outdoor walkways in office districts and other less dense parts of downtown areas.

The uneven nature of UNIMPEDED FLOW. While the people walking in the plaza—which is 17 ft (5.2 m) wide, compared to 23 ft (7 m) in the preceding picture—have almost 130 sq ft (12 m^2) per person on the average, the space allocation for the eight individuals in the foreground is closer to 70 sq ft (6.4 m^2). Thus, indirect interaction with others is still quite frequent in the upper range of UNIMPEDED FLOW.

The midpoint of the IMPEDED FLOW range, with about 75 sq ft (6.9 m^2) per person, or a flow rate of about 4 people per min per ft (13 per m) of walkway width. Physical conflicts are absent, but pedestrian navigation does require constant indirect interaction with others. This rate of flow is recommended as an upper limit for the design of outdoor walkways in shopping districts and other dense parts of downtown areas.

Lower range of UNIMPEDED movement, approaching OPEN FLOW. About 350 sq ft (32.2 m^2) per person, or a flow rate of less than 1 person per min per ft (3.3 per m) of walkway width. Complete freedom to select the speed and direction of movement; individuals behave quite independently of each other. For a design standard based solely on pedestrian density, this amount of space can be considered excessive.

SOURCE: PUSHKAREV AND ZUPAN

FIGURE C-2
PHOTOS OF PEDESTRIAN FLOW LEVELS

JAMMED FLOW. Space per pedestrian in this view is about 3.8 sq ft (0.35 m^2). This is representative of the lower half of the speed-flow curve, where only shuffling movement is possible and even the extremely uncomfortable maximum flow rate of 25 people per min per ft (82 per m) of walkway width cannot be attained due to lack of space. Photograph by Louis B. Schlivek.

The threshold of CONGESTED FLOW. The first eleven people in the view have about 16 sq ft (1.5 m^2) per person, corresponding to a flow rate of about 15 people per min per ft (49 per m) of walkway width. The beginnings of congestion are evident in bodily conflicts affecting at least three of the walkers, and in blocked opportunities for walking at a normal pace.

The onset of CROWDED FLOW, with an average of about 24 sq ft (2.2 m^2) per person, or a flow rate of about 10 people per min per ft (33 per m) of walkway width. Choice of speed is partially restricted, the probability of conflicts is fairly high, passing is difficult. Voluntary groups of two, of which two can be seen in the picture, are maintained, but cause interference. Note also some overflow into the vehicular roadway in the background.

The midpoint of the CONSTRAINED FLOW range, with about 30 sq ft (2.8 m^2) per person, or a flow rate of about 8 people per min per ft (26 per m) of walkway width. The choice of speed is occasionally restricted, crossing and passing movements are possible, but with interference and with the likelihood of conflicts. The man in the dark suit seems to be able to cross in front of the two women in the foreground quite freely, but in the background near the curb people are having difficulty with passing maneuvers.

SOURCE: PUSHKAREV AND ZUPAN

FIGURE C-2 (CONTINUED)
PHOTOS OF PEDESTRIAN FLOW LEVELS

TABLE C-3: TRAFFIC LEVELS OF SERVICE FOR FREEWAYS

Level of Service	Description	Volume/Capacity (v/c) Ratio*
A	Level of Service A describes a condition of free flow, with low volumes and high speeds. Traffic density is low, with speeds controlled by driver desires, speed limits, and physical roadway conditions. There is little or no restriction in maneuverability due to the presence of other vehicles, and drivers can maintain their desired speeds with little or no delay.	0.00-0.60
B	Level of Service B is in the higher speed range of stable flow, with operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation. Reductions in speed are not unreasonable, with a low probability of traffic flow being restricted.	0.61-0.70
C	Level of Service C is still in the zone of stable flow, but speeds and maneuverability are more closely controlled by the higher volumes. Most of the drivers are restricted in their freedom to select their own speed, change lanes, or pass. A relatively satisfactory operating speed is still obtained.	0.71-0.80
D	Level of Service D approaches unstable flow, with tolerable operating speeds being maintained though considerably affected by changes in operating conditions. Fluctuations in volume and temporary restrictions to flow may cause substantial drops in operating speeds. Drivers have little freedom to maneuver, and comfort and convenience are low, but conditions can be tolerated for short periods of time.	0.81-0.90
E	Level of Service E cannot be described by speed alone, but represents operations at even lower operating speeds (typically about 30 to 35 mph) than in Level D, with volumes at or near the capacity of the highway. Flow is unstable, and there may be stoppages of momentary duration.	0.91-1.00
F	Level of Service F describes forced flow operation at low speeds (less than 30 mph), in which the freeway acts as storage for queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of downstream congestion. In the extreme, both speed and volume can drop to zero.	1.00+

* Capacity is defined as Level of Service E.

SOURCE: Environmental Science Associates, Inc. from information in the Highway Capacity Manual, Special Report 87, Highway Research Board, 1965.

INTERSECTION ANALYSIS

The capacity analysis of each intersection at which a turning movement count was made utilized the "critical lane" method. This method of capacity calculation is a summation of maximum conflicting approach lane volumes that gives the capacity of an intersection in vehicles per hour per lane. (This method is explained in detail in an article entitled "Intersection Capacity Measurement Through Critical Movement Summations: A Planning Tool," by Henry B. McInerney and Stephen G. Peterson, January 1971, Traffic Engineering. This method is also explained in "Interim Materials on Highway Capacity", Transportation Research Circular No. 212, Transportation Research Board, January 1980). The maximum service volume for Level of Service E was assumed as intersection capacity. A service volume is the maximum number of vehicles that can pass an intersection during a specified time period in which operating conditions are maintained corresponding to the selected and specified Level of Service (see Table C-4). For each intersection analyzed, the existing peak-hour volume was computed and a volume-to-capacity (v/c) ratio was calculated by dividing the existing volume by the capacity at Level of Service E.

TABLE C-4: VEHICULAR LEVELS OF SERVICE AT SIGNALIZED INTERSECTIONS

Level of Service	Description	Volume/Capacity (v/c) Ratio*
A	Level of Service A describes a condition where the approach to an intersection appears quite open and turning movements are made easily. Little or no delay is experienced. No vehicles wait longer than one red traffic signal indication. The traffic operation can generally be described as excellent.	less than 0.60
B	Level of Service B describes a condition where the approach to an intersection is occasionally fully utilized and some delays may be encountered. Many drivers begin to feel somewhat restricted within groups of vehicles. The traffic operation can generally be described as very good.	0.61-0.70
C	Level of Service C describes a condition where the approach to an intersection is often fully utilized and back-ups may occur behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so. The driver occasionally may have to wait more than one red traffic signal indication. The traffic operation can generally be described as good.	0.71-0.80
D	Level of Service D describes a condition of increasing restriction causing substantial delays and queues of vehicles on approaches to the intersection during short times within the peak period. However, there are enough signal cycles with lower demand such that queues are periodically cleared, thus preventing excessive back-ups. The traffic operation can generally be described as fair.	0.81-0.90
E	Capacity occurs at Level of Service E. It represents the most vehicles that any particular intersection can accommodate. At capacity there may be long queues of vehicles waiting up-stream of the intersection and vehicles may be delayed up to several signal cycles. The traffic operation can generally be described as poor.	0.91-1.00
F	Level of Service F represents a jammed condition. Back-ups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the approach under consideration. Hence, volumes of vehicles passing through the intersection vary from signal cycle to signal cycle. Because of the jammed condition, this volume would be less than capacity.	1.01+

* Capacity is defined as Level of Service E.

SOURCE: San Francisco Department of Public Works, Traffic Division, Bureau of Engineering from Highway Capacity Manual, Highway Research Board, 1965

APPENDIX D: AIR QUALITY

APPENDIX D: SAN FRANCISCO AIR POLLUTANT SUMMARY 1981-1984

STATION: 900 23rd Street, San Francisco

POLLUTANT:	STANDARD	1981	1982	1983	1984/i/
OZONE (O^3) (Oxidant)					
1-hour concentration, ppm/a/					
Highest hourly average	0.10 /b/ 0.12 /c/	0.07	0.08	0.13	0.10
Number of excesses of state standard		0	0	1	0
Expected Annual Excess (federal)/d/		0.0	0.0	0.3	-
CARBON MONOXIDE (CO)					
1-hour concentration, ppm					
Highest hourly average	20 /b,e/	8	12	7	-
Number of excesses of standard		0	0	0	-
8-hour concentration, ppm					
Highest 8-hour average	9 /b,c/	5.3	9.1	5.1	10.8
Number of excesses of standard		0	1	0	1
TOTAL SUSPENDED PARTICULATE (TSP)					
24-hour concentration, ug/m^3/a/					
Highest 24-hour average	100 /b,f/	103	126	117	-
Number of excesses of standard/g/		1	3	4	-
Annual concentration, ug/m^3					
Annual Geometric Mean	60 /b,f/	56	57	55	60
Annual excess of standard		No	No	No	1
LEAD (Pb)					
30-day concentration, ug/m^3					
Highest 30-day average	1.5 /b/	0.6	0.7	0.4	-
Number of excesses of standard		0	0	0	-
NITROGEN DIOXIDE (NO_2)					
1-hour concentration, ppm					
Highest hourly average	0.25 /b/	0.11	0.13	0.13	0.14
Number of excesses of standard		0	0	0	0
SULFUR DIOXIDE (SO_2)					
24-hour concentration, ppm					
Highest 24-hour average	0.05 /b/	0.016	0.012	0.018	0.3
Number of excesses of standard/g,h/		0	0	0	0

/a/ ppm: parts per million. ug/m^3: micrograms per cubic meter.
/b/ State standard, not to be equaled or exceeded, except for CO standards, which are not to be exceeded.
/c/ Federal standard, not to be exceeded more than once per year, except for annual standards, which are not to be exceeded.

(Continued)

APPENDIX D: SAN FRANCISCO AIR POLLUTANT SUMMARY 1981-1983 (Continued)

/d/ Expected Annual Excess is a three-year average of annual excesses of the federal standard.
/e/ The state one-hour CO standard was revised from 35 ppm to 20 ppm in January 1983. The federal one-hour standard remains 35 ppm.
/f/ The California ARB has redefined the state particulate standard to apply to "inhalable" particulates only (i.e., those which have a diameter less than ten microns). The new standards are 50 ug/m^3 for 24-hour averages and 30 ug/m^3 for the annual geometric mean. No data is currently available on the particle size distribution of the TSP sampled at the San Francisco monitoring station.
/g/ Number of observed excess days (measurements taken once every six days).
/h/ Exceeding the SO_2 standard is a violation only if a concurrent excess of the state ozone or TSP standards occurs at the same station. Otherwise, the federal standard of 0.14 ppm applies.
/i/ 1981-1984 data collected at 900 23rd Street

SOURCE: BAAQMD, 1981 - 1983, Air Quality in the San Francisco Bay Area; and California ARB, 1981 - 1984, California Air Quality Data.

APPENDIX E: TYPICAL NOISE LEVELS

	Decibels	
	110	Pile driver (from 50 feet)
Very Loud	100	
		Light helicopter take-off (from 125 feet)
	90	
		Diesel truck (from 50 feet)
	80	
Loud		Radio or TV playing in Living Room
	70	
		Passenger car on city street (from sidewalk)
	60	
Quiet	50	
	40	
		Whisper
Very Quiet		
		Rustle of paper
	30	

SOURCE: Department of City Planning, "A Proposal for Citizen Review: Transportation Noise, Environmental Protection Element of the Master Plan of San Francisco," August 1984.

APPENDIX F: MAJOR OFFICE BUILDING CONSTRUCTION IN SAN FRANCISCO THROUGH 1983 (GROSS SQUARE FEET)

Year	Total Gross Sq. Ft. Completed	5-Year Total	5-Year Annual Average	Cumulative Total All Office Buildings Completed	Cumulative Total Downtown Office Buildings
Pre-1960		(Net)*	(Net)*	28,145,000**	24,175,000***
1960	1,183,000				
1961	270,000				
1962	--				
1963	--				
1964	1,413,000				
		2,866,000	573,200		
1960-1964		(2,580,000)	(516,000)	30,725,000	26,754,000
1965	1,463,000				
1966	973,000				
1967	1,453,000				
1968	1,234,000				
1969	3,256,000				
		8,379,000	1,675,800		
1965-1969		(7,541,000)	(1,508,000)	38,266,000	34,295,000
1970	1,853,000				
1971	--				
1972	1,961,000				
1973	2,736,000				
1974	2,065,000				
		8,615,000	1,723,000		
1970-1974		(7,753,000)	(1,550,000)	46,019,000	42,048,000
1975	536,000				
1976	2,429,000				
1977	2,660,000				
1978	--				
1979	2,532,000				
		8,157,000	1,631,400		
1975-1979		(7,341,000)	(1,468,000)	53,360,000	49,389,000
1980	1,284,000				
1981	3,029,000				
1982	3,771,000				
1983	4,108,000				
		12,192,000/d/	3,048,000+		
1980-1983		(10,972,800)/d/	(2,743,200)	65,552,000	60,144,000

(Continued)

MAJOR OFFICE BUILDING CONSTRUCTION IN SAN FRANCISCO THROUGH 1983 (GROSS SQUARE FEET) - FOOTNOTES

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* Total net square feet (90% of gross). Net new space is added at an increase factor of 90%, since it is assumed that space equal to 10% of a new building is demolished to make land available for the new replacement building.

** San Francisco Downtown Zoning Study, Working Paper No. 1, January 1966, Appendix Table 1, Part 1. For pre-1965, data include the area bounded by Vallejo, Franklin, Central Skyway, Bryant and the Embarcadero. Pre-1965 data also include one-third of retail/office mixed use. For post-1964, data include the entire city.

*** Gross floor space for downtown offices is included for the following functional areas: Financial, Retail, Hotel, Jackson Square, Golden Gateway, Civic Center, South of Market, and Outer Market Street as defined in the cited January 1966 report. For post-1964, the entire area east of Franklin Street is included.

+ Four-year total and average.

SOURCE: Department of City Planning, March 15, 1983, and July 16, 1984.
